

A Publication Of
Grove Enterprises

**MONITORING
TIMES**

*Hurricane Hunters,
American Trans Air
Profile,
SW Guide & More*

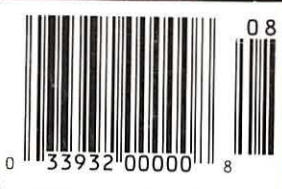
Mayday!

Monitoring Coast Guard Search and Rescue Missions

Portugal on Shortwave

NATION WITH A WANDERLUST

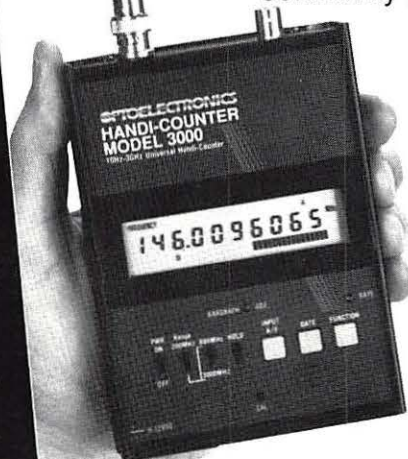
How to Restore a Vintage Radio



MAXIMUM RANGE MAXIMIZED SENSITIVITY

We've Carefully balanced the amount of gain used in our input amplifiers - too much or too little results in poor performance. **OPTOELECTRONICS' HANDI-COUNTERS™** with maximized sensitivity give you the maximum range for antenna pick-up.

Made in the USA



MODEL 3000
Multi-function Counter
10Hz-3GHz, 10 Digit LCD with
frequency, period, ratio, interval
& signal level bargraph....\$375.

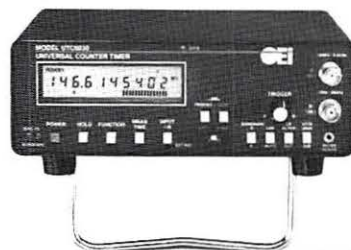


**Maximum
Security
Device.**
Increase your
frequency
finding™ by 10
times the distance
or more.
**Tunable
Preselector
APS-104
\$995.**

Counter Sold
separately

MODEL 8030

With all the features of the
3000 plus enhanced input
signal conditioning and
enhanced TCXO time base
\$579.



OPTOELECTRONICS

\$199.



The Original Pocket-Sized LED Handi-Counter™

All of **OPTOELECTRONICS' LED
Handi-Counter™** will:

- Count frequencies above 2.4GHz.
- Have display saving Power Switch
(avoids premature LED burn-out, leading cause of
counter failure.)

**Accept no substitutes -
Look for the OPTOELECTRONICS
name on the label!**

**Only OPTOELECTRONICS
offers you MAXIMIZED SENSITIVITY.**

Factory Direct Order Line

1-800-327-5912

FL(305)771-2050 • FAX(305)771-2052

Model 2210A
10Hz-2.4GHz Full range
counter. Price includes
Nicads & AC charger/adaptor.

5821 NE 14th Ave. • Ft. Lauderdale, FL33334 • 5% Ship/Handling (Max. \$10)
U.S. & Canada. 15% outside continental U.S.A.
Visa and Master Card accepted.

\$99.



Model 2300 - 1MHz-2.4GHz
Available with NiCads and AC
Charger Adapter. Complete
Package only....\$128.

MONITORING TIMES



Search and Rescue in Cape Cod

by Fred Lloyd

8

Between the tourists and the "Captains Courageous," hardly a day goes by without someone calling "Mayday." The sophisticated communications system maintained by the Woods Hole U.S. Coast Guard Search and Rescue helps ensure that all emergencies in their 10,000 square mile zone are answered quickly and professionally.

Shortwave Portugal

by Larry Miller

12

The nation that initiated the Age of Exploration to several continents left behind its cultural stamp and a ready-made audience for news from Portugal. Radio is "the tie that binds" the home country and its far-flung children. But Mother Church may prove a stronger thread than Mother Portugal.

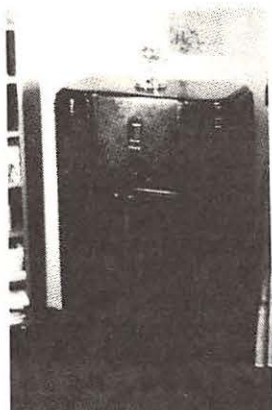


The Fascination of Vintage Radio

by Linton Robertson

16

Give anyone with an interest in radio, antiques, or communications half a chance and the odds are good that a full blown case of collectomania will develop. Not to worry. That old hunk of junk you "had" to buy can be restored to a fully functioning and even attractive piece of furniture. Then maybe you can move back into the house again.



Virus Alert! *Is Your Computer Sick?*

by Bob Kay

20

Sex, Lies and Audio Tape

by Steve Douglass

22

Our man in Texas finds himself a suspect in the taping of a U.S. Representative's cellular phone call ... all because he's developed a small reputation for using a scanner!

And More ...

The season begins to pick up with more equipment reviews: a handheld scanner, the Realistic PRO-35 (p.90); Sony's innovative ICF-SW800 (p.88); Universal's M1000 decoder card (p.58); and Grove's Scantenna (p.41). Yes, we know you're waiting for the definitive word on this year's new top-of-the-line shortwave receivers. We'll not disappoint you this fall; it's in the works.

This season is also storm season. Uncle Skip (p.42) reviews the basics for those who've never tried monitoring Mother Nature gone berserk (in somebody else's back yard, that is. Better leave her alone if she's kicking up in your neighborhood).

Doug Demaw provides instructions for building an AC line filter that may help protect your equipment as well as clear up interference from both storms and man-made sources (p.92).

There's lots, lots more: We take a peek into American TransAir, KVMR in Nevada City, CA, and the National Reconnaissance Office spy satellites; we talk about whether you need an outside antenna for scanning and how to tune in time signal stations ... Check it out for yourself, I've got to get reading!

DEPARTMENTS

Letters	3	Outer Limits	54
Communications	4	Below 500 kHz	56
Glossary	6	Reading RTTY	58
Shortwave Broadcasting	26	QSL Corner	59
Utility World	30	Shortwave Guide	60
The Scanning Report	34	Magne Tests...	88
What's New?	38	Scanner Equipment	90
The Beginner's Corner	42	DeMaw's Workbench	92
The Federal File	44	Experimenter's Workshop	94
Plane Talk	46	Antenna Topics	96
American Bandscan	48	Ask Bob	98
Satellite TV	50	Convention Calendar	101
On the Ham Bands	52	Stock Exchange	102

MONITORING TIMES

MONITORING TIMES (ISSN: 0889-5341) is published monthly by Grove Enterprises, Inc., Brasstown, NC, USA.

Address: P. O. Box 98, 140 Dog Branch Road, Brasstown, NC 28902

Telephone: (704) 837-9200

FAX: (704) 837-2216 (24 hrs)

Subscription Rates: \$19.50 in U.S. and \$28 US Funds elsewhere; Label indicates last issue of subscription

STAFF

Publisher

Bob Grove, WA4PYQ

Editor

Rachel Baughn

Editorial Assistant

Beverly Berrong

Subscription Services

Chanel Hilliard

Typist

Elsa Kerschner

Advertising

Beth Leinbach (704)389-4007

Dealerships

Kelly Davis

Editorial Staff

Frequency Manager Greg Jordan

Frequency Monitors B. W. Battin

David Datko

Jack Hubby

Stephen Price

Tammy Wells

Program Manager Kannon Shanmugam

Program Monitors John Carson

Jim Frimmel

Reading RTTY Jack Albert, WA9FVP

Beginner's Corner T. J. Arey, WB2GHA

Plane Talk Jean Baker

Below 500 kHz Kevin Carey, WB2QMY

Experimenter's Wkshp Bill Cheek

DeMaw's Wkbench Doug DeMaw

SW Broadcasting Glenn Hauser

High Seas James R. Hay

Scanning Report Bob Kay

On the Ham Bands

Propagation Report Ike Kerschner, N3IK

Magne Test... Lawrence Magne

Communications

What's New? Larry Miller

Federal File Rod Pearson

Satellite TV Ken Reitz, KC4GQA

Outer Limits John Santosuosso

Antenna Topics Clem Small, KR6A

SW Broadcast Logs

QSL Corner Gayle Van Horn

Utility World Larry Van Horn,

N5FPW

American Bandscan Karl Zuk

Correspondence to columnists should be mailed c/o Monitoring Times. Any request for a personal reply must be accompanied by an SASE.

Second class postage paid at Brasstown, NC, and additional mailing offices.

POSTMASTER: Send address changes to Monitoring Times, Post Office Box 98, Brasstown, NC 28902.

LETTERS

Question: What do WLW in Cincinnati, Ohio, and out-of-band CB transmissions have in common? Nothing, I hope, except that when the skip is in, anything can happen. A couple of coincidental letters proves our point.

Assistant Chief Engineer at 700 WLW Radio, Paul Jellison WD8KMX, was eager to respond to the out-of-bander in Scranton, Pennsylvania, who identified himself in the June issue as "Magnum." Jellison, who has been a CB op since 1967 and a ham since 1977, says WLW operates a "legal" system on 26.45 MHz.

Explains Jellison, "The bottom line is anyone within 15 kHz just wreaks total havoc with our system. Someone in Nevada or Florida can destroy a good communications link in Ohio and think they are being a 'good neighbor' [Magnum's words]. This reduces our usable system (which should be good for 50 miles) by at least 50%.

The best way to be a good neighbor is to stay between Ch. 1-40."

What's Jellison's advice for dealing with the profanity on 11 meters? Get a ham license. Or to clean up a channel, ignore the offending person and don't tolerate profanity or lewd talk from anyone. "After a while the flakes will go away. The worst thing you can do is acknowledge the person."

Our second contributor, Don Jacquest of British Columbia, did get his license under Canada's new no-code rules. However, while listening to some out-of-band CBers (maybe Magnum?), he heard an unusual signal on 26.45 MHz. Naturally, it proved to be an FM signal that "purported to be WLW 700 AM from Cincinnati, Ohio."

Jacquest wrote the station and received a reply from Al Kenyon, Chief Engineer at WLW. Al explained that the 75-watt

narrowband FM transmitter, called an Interruptable Feedback (IFB) system, is used to coordinate news, traffic reports and other programs originating outside the studio. That's not a bad catch for a signal that was intended to travel 50 miles! A word of warning to U.S. listeners: in this country listening to studio-to-transmitter links may be unlawful under ECPA '86.

Although Cincinnati to British Columbia is good skip, Ronald Deming of Montana sent us a clipping that tops it. A DXer, justifiably proud of receiving KBOZ-AM, a 5 kW station in Bozeman, Montana, made sure the station would see it by publishing his 8-1/2" x 11-1/2" reception report in the Bozeman *Chronicle*. Who was the DXer? Veli-Matti Anttila of Oulu, Finland!



Whatever happened to Radio Canada International? many readers may be wondering after the drastic solution to the CBC's financial crisis was reported in MT's May issue. At our request, Wojtek Gwiazda, one of the spokespersons for the RCI staff, sent this update to our readers:

"By the time you read this letter, most of us at RCI will be gone. You, like many of us, will wonder if that's it; if RCI as we've known it is really gone forever.

(Please turn to p. 100)

A Must in August...

1992 Passport to World Band Radio

With nearly 80,000 copies sold last year, **Passport** for '92 is better than ever. "The" SWL reference, **Passport** is packed with by-frequency schedules, how-to articles, features and Larry Magne's best (and worst) of equipment reviews. Buy in August and as our

FREE GIFT

we'll include our handy, wallet-sized UTC-local time conversion card (a \$2 value). A DX Radio Supply exclusive, it's the perfect compliment to your new **Passport**. Offer good in August ONLY. **Passport '92 is just \$15.95.** Add \$1.70 book rate or \$3.10 UPS. Ships September.

Use Your VISA or Mastercard
Call Our Order Recorder
215 273-7823

New...New...New Ham Stuff

Huge new guide to every service in ham radio. An exhaustive listing of who's who and what's what in radio gear, accessories, publications. SWLers and scanners will find it helpful too. \$19.95 plus \$2.05 book rate or \$3.35 UPS.

Send for our Catalog—25 cents

A GUIDE TO U.S. Coast Guard Radio

The prime sourcebook on Coast Guard radio communications. Lists C.G. communications stations, longwave, shortwave and VHF operating frequencies, call letters and addresses. Info on weather and mariners notices broadcasts, aircraft, nautical fleet, rescue centers, history, mission and MORE. \$12.95 plus \$1.70 USPS or \$2.60 UPS.

Guide to Old Radios

Over 350 photos and plenty of fascinating stories helps collectors identify and date old radios. Lists 3000+ collectible radios and related items detailing model names, numbers, descriptions and price ranges. \$16.95 plus \$1.70 book rate or \$2.60 UPS.

HOW TO REPAIR Old Time Radios

Locate trouble spots, repair defective parts, obtain obsolete tubes. This nuts-and-bolts guide for the novice explains all the subtleties of a bygone technology. \$12.95 plus 1.70 book rate or \$2.60.

DX Radio Supply

MC/Visa orders 215 273-7823 or send check, money order, cash, MC/Visa to PO Box 360 Wagontown, PA 19376. PA res add 6% sales tax.

A Pirate Show of Independence

Close to two hundred thousand people in Uniondale, New York, had their Independence Day fireworks display marred when a pirate radio station jammed a WBAB music simulcast.

The WBAB-FM 3,000-watt transmitter is located 25 miles away from the display, but the pirate succeeded in supplanting the signal for almost 1-1/2 hours, heard through the loudspeakers at Mitchel Field and the surrounding neighborhood. Listeners further away heard the simulcast normally.

The pirate played the theme song from a movie called "Pump up the Volume" about a teenage radio pirate, shouted epithets against the FCC and played a rap song full of obscenities and another song about whales.

WBAB's program director said a transmitter that could fit in the trunk of a car could have bumped their signal. There has been speculation that the pirate may have been the same one who interrupted last year's July 4th broadcast by WALK in East Patchougue.

Cellular and the Last Gasp

At least 20 heart attack victims in the Hackensack, New Jersey, area are alive today because of modern medicine and cellular phones. Hackensack Medical Center's Mobile Intensive Care Unit is able to transmit a 12-lead electrocardiogram via cellular telephone while en route between the victim's location and the hospital.

The briefcase-size device containing the cellular phone contains an instrument that measures the heartbeat with the same detail as hospital-based electrocardiograph machines. At the hospital doctors can decide more quickly if medicine to dissolve blood clots is necessary and the emergency room staff can prepare for the patient's arrival.

World War II Revenge

In an article titled, "World War II Revenge," a supermarket tabloid called the *Weekly World News* says that "secret computer chips will shut down all Japanese [manufactured] TVs, stereos and VCRs on December 7th," the anniversary of Pearl Harbor Day.

According to business analyst Iko Nakamura, some 200,000 "killer chips" got

into products destined for the U.S. between August 1989 and January 1990. Nakamura believes that the scheme was bankrolled by Japanese veterans who still seethe over the crushing defeat their country suffered at the hands of America in World War II.

The shut down will reportedly occur just after midnight and last for one hour.

Cellular Phone Scrambling

If you're one of the handful of people who have violated the terms of the 1989 Electronics Communication Privacy Act (ECPA) and actually listened to cellular phone calls, your fun may soon be ending.

Starting this month, GTE is offering its California Mobilnet customers the first mass-marketed cellular phone scrambler. The device allows callers to "speak in perfect privacy and, for the first time, to speak to anyone, regardless of whether the person on the other end has a descrambler."

Other cellular phone companies are expressing interest in licensing the device; however, Norman Black, a spokesman for the Cellular Communications Trade Association said that eavesdropping on cellular calls is hard to do. "I believe that most customers don't need to worry about this."

Janet Henderson, a GTE spokeswoman agreed. "Scramblers aren't for everyone. My mother doesn't need one." Your mom probably doesn't need a cellular phone, either.

Scouting Ham Radio

Hal Camlin, W3QLP, and the Baltimore Area

Council of the Boy Scouts of America are writing a *Scouting and Exploring Ham Radio Manual*.

If you've got experience in both ham radio and Boy Scouting, Hal would like to hear from you at BSA Post 73, 7506 Jacquill Rd, Glen Burnie, MD 21061-3812.

Volunteer's Scanner Shows "No Community Benefit"

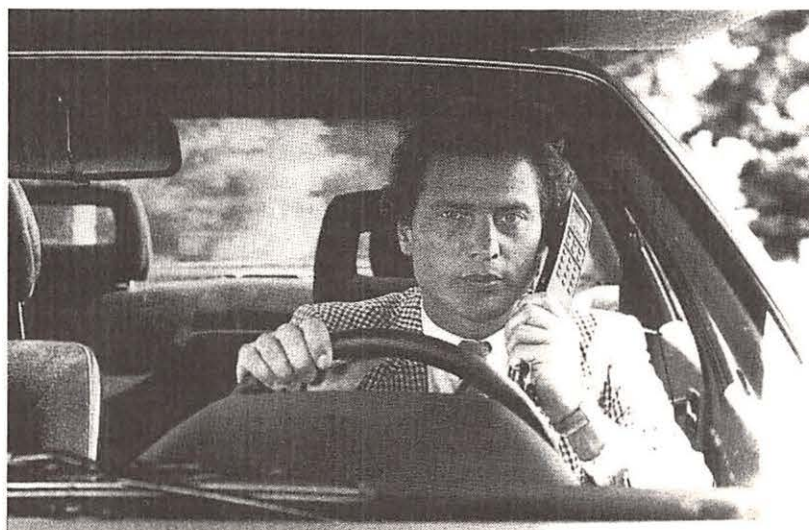
When Christian Stamm of Overland Park, Kansas, lent his scanner to a friend, little did he know that it would end up in the hands of police.

Stamm, a newly licensed ham radio operator and active Red Cross disaster team volunteer used his scanner to monitor the fire department dispatch frequencies in the 11-city Johnson County area for which his Red Cross Chapter is responsible. Unbeknownst to Stamm, Overland Park has an ordinance that forbids citizens from having a "police monitor" in a vehicle.

When Stamm loaned his scanner to a friend, he put it in the back of his van. Later, the friend was stopped by police because his vehicle looked similar to one that took part in a robbery. Police found the scanner and confiscated it.

"The judge told me that if I could get the police chief to give me a permit, I could get my scanner back," Stamm said. He applied on the basis that he needs to monitor Johnson County dispatch in performing his function of aiding fire victims and the department itself.

But the Overland Park police chief has apparently never granted any permits. His reason? Says Stamm, "He denied it saying



COMMUNICATIONS

that there was no 'community benefit demonstrated.'"

Now, says Stamm, the fire company will not even talk to Red Cross volunteers. "If you say you heard it on the scanner, they hang up on you."

Scanner listeners who would like to hear the city's side of the story or who would like to explain the usefulness of scanners to Overland Park officials can write to Police Chief Myron Scafe, Overland Park Police Department, 8500 Antioch, Overland Park, Kansas 66212.

"Toy" Eavesdroppers Serious Business

Secret wiretap and "spy transmitters" are proliferating, reaching the mass market through advertisements in a number of magazines. But they're just toys, right? Wrong.

According to the *W5YI Report*, not only are they real but they have to be approved by the FCC. So concerned is the Commission about the proliferation of these bugs that they have sent warnings to over 142 manufacturers, warning them that if their device is not FCC approved, they face fines of up to \$10,000 a day and even imprisonment.

Unfortunately for the Commission, some spy devices will never be FCC certified. As *W5YI* says, "The presence of an FCC ID on a fountain-pen or martini-olive transmitter would be a dead give-away."

Howdy, Sailor

Villa Mimos is part of Rio de Janeiro's Estacio district. It is a poor area, just two blocks long. Vendors sell food and drinks outside about 50 small stone houses of faded blue, pink or yellow.

But selling lemonade and hot dogs is not the main business of Villa Mimosa. For the past 100 years, it has been one of Rio's most notorious red-light districts and the blue, pink and yellow buildings house over 400 prostitutes.

Now a new business has come to Villa Mimosa: a prostitute radio station. Euridice Coelho Reis, 44, herself a one-time employee of the Villa, launched the station to provide both prostitutes and clients with information about AIDS.

"We decided to build a radio station because most of our girls are illiterate. And our

clients would probably be uncomfortable because they don't want their wives to know where they spend their free time."

Prostitute Radio broadcasts news, music, interviews and advice about safe sex in Villa Mimosa. Already, the station has distributed 12,000 condoms, known in Brazil as "Venus's Little T-shirts." No word if there are plans for a shortwave outlet.

"For" or "Against"

According to recently released information, critics are charging that while the U.S. military was bombing Saddam Hussein back to the Stone Age, the Iraqi dictator was getting an unexpected boost from another part of the U.S. government — the Voice of America.

So angry are some that they are calling the VOA's Arabic Service "The Voice of Baghdad." On one occasion, the Arabic Service, as part of its news coverage of the conflict, broadcast live an Iraqi High Command's communique. It falsely hailed the success of Iraqi forces, accused the U.S. of unwarranted aggression, and blamed the Bush administration for undermining peace efforts to end the war.

Within the hour, the Arabic service carried yet another Iraqi communique claiming that the U.S.-led coalition was suffering heavy battlefield losses.

"They did a miserable job of accurately reflecting the U.S. public support for the war," said Rep. Howard Berman, a California Democrat whose House Foreign Affairs subcommittee has jurisdiction over the VOA.

Many who work at the VOA view themselves as being a kind of world-wide National Public Radio; however, the organization's charter indicates otherwise. Says Joseph Morris, chief of staff of the USIA during the Reagan administration, "They're supposed to do public diplomacy, not journalism."

There were additional criticisms from a number of quarters. Mistrust of VOA among America's allies was so intense after the VOA installed a 50 kW transmitter in Bahrain, the government there refused to allow it to be used to broadcast Arabic programs from the facility.

Senior VOA officials reject such criticisms, asserting that while broadcasters may have made bad editorial decisions, the overall coverage was fair and balanced. Two studies, commissioned by the VOA, gave the organization passing grades.

DISCONE SCANNER ANTENNA

MADE
IN
USA

ONLY
\$2900



- Receives all AM-FM & SSB frequencies.
- Gain improves with frequency increase.
- Mounts to any vertical mast 1" to 1½".
- Aluminum mount & elements.
- 8 cone & 8 disk elements—same as other discones selling for nearly 3 times our price
- Accepts standard PL-239 connector.

Order Direct From
Lakeview Company, Inc.
3620-9A Whitehall Rd.
Anderson, SC 29624
(803) 226-6990

Add \$4.00 per order for shipping/handling
Catalog Available • Dealers Welcome

THERE IS NO EXCUSE FOR PAYING TOO MUCH

Free shipping on all prepaid orders.

ALL NEW '91 CATALOG ! Only \$2

SCANNER MODS FOR PRO2004, 2005, 2006,
PRO34, BEARCAT 200, 205, 760, 950
Call For Pricing !

Midland VHF Portable Weather Radio
AUTOMATIC ALERT, List \$79 SALE \$32
New ! Ranger RCI1000 VHF Mini-HT
2 CH., 1 WATT List \$197 SALE \$150
New ! Regency INF 10 Mobile Scanner
W/TURBO SCAN II List \$209 SALE \$119
Bearcat BC170 II Band Base Scanner
W/AIRCRAFT, List \$189 SALE \$109
UNIDEN BEARCAT BC200 XLT Scanner
12 BANDS, FREE MODS, . SALE \$255
COLT CPI000 Cordless Phone
3 YEAR WARR. List \$99 SALE \$50
New ! AE3 VOX Transmitter Kit
49 MHz CRystal CONTROLLED \$45

INTERCEPT INC.
6014 OAK HILL DRIVE
FLOWERY BRANCH, GA 30542
PHONE (404) 967-9757

Glossary

Most abbreviations and "radio shorthand" terms will be explained in the article in which they are used, but following is a list of terms and abbreviations you will find frequently in our pages. We hope you will find it useful.

AFB	Air Force Base	LORAN	Long Range Aid to Navigation
AFRES	Air Force Reserve	LSB	Lower sideband
AM	Amplitude modulation (transmission mode)	MARS	Military Affiliate Radio System
AMVER	Automated Merchant Vessel Rescue System	MF	Medium frequency; includes standard AM broadcast band (300 kHz-3MHz)
ANG	Air National Guard	MHz	Megahertz (1,000 kHz)
ARRL	American Radio Relay League	MOA	Military Operations Area
ARRS	Aerospace Rescue and Recovery Service	MUF	Maximum usable frequency
ARTCC	Air Route Traffic Control Center	NASA	National Aeronautics and Space Administration
ATC	Air Traffic Control	NG	National Guard
AWACS	Airborne Warning and Control System	NNNN	End of RTTY message
Baud (Bd)	Bits of data per second	NORAD	North American Aerospace Defense Command
BBC	British Broadcasting Corporation	NRC	National Radio Club
BFO	Beat frequency oscillator (for reception of CW, RTTY, etc.)	Op(s)	Operation(s)
CAP	Civil Air Patrol	PFC	Prepared form card
Comm	Communication	QRM	Noise or interference
COMSTA	Communications station	QSL	Station's verification of a reception report from a listener
CQ	General call to anyone monitoring, inviting reply	QSO	A two-way communication
CW	Continuous wave (Morse code)	RAAF	Royal Australian Air Force
DE	(French) "from"... ID or call sign	RAF	Royal Air Force
DOD	Department of Defense	RTTY	Radioteletype
Duplex	Two-way communications using two different frequencies.	SAC	Strategic Air Command
DX	CW abbreviation for distance	SAR	Search and rescue
DXer	One who listens to distant stations	SASE	Self-addressed stamped envelope
EAM	Emergency action messages	SATCOM	Satellite communications
ECPA	Electronic Communications Privacy Act of 1986	Simplex	Two-way communication using one frequency
FAX	Facsimile	SINPO	A signal-quality rating system (1-5) on each of the following characteristics: strength, interference, noise, propagation, overall quality
FCC	Federal Communications Commission	SSB	Single sideband
FEMA	Federal Emergency Management Administration	SW	Shortwave
FM	Frequency modulation (transmission mode)	SWBC	Shortwave broadcast
GCCS	Global Communications and Control System	SWL	Shortwave listener
GMDSS	Global Maritime Distress and Safety System	TAC	Tactical Air Command; tactical
HF	High frequency; shortwave (3-30 MHz)	TFC	Traffic (communications)
Hz	Hertz: unit of frequency (formerly cycles per second)	UHF	Ultra-high frequency (300-3,000 MHz)
ID	Identification	USAF	United States Air Force
IF	Intermediate frequency	USB	Upper sideband
IRC	International Reply Coupon (available from post office)	USIA	United States Information Agency
ISB	Independent sideband	USCG	United States Coast Guard
ITU	International Telecommunications Union	USCGC	United States Coast Guard Cutter
kHz	Kilohertz (1000 Hertz)	USMC	United States Marine Corps
kW	Kilowatt	USN	United States Navy
LCD	Liquid crystal display	UTC	Coordinated Universal Time--
LED	Light emitting diode	Ute	The time at 0° longitude
LF	Low frequency (30-300 kHz)	VHF	Slang for utilities (2-way comms)
		VLF	Very high frequency (30-300 MHz)
		VOA	Very low frequency (3-30 kHz)
		VOLMET	Voice of America
		WARC	(French) "flying weather"
		wpm	World Administrative Radio Conference
			Words per minute (usually used w/ Morse or RTTY)
		WX	Weather
		YL	"Young lady," female operator

Register Now!

1991 MONITORING TIMES CONVENTION



Sue, Grove Enterprises tech rep. will answer technical questions

Knoxville, Tennessee

October 4, 5, 6 1991 at the Hyatt Regency

Reservations

Hyatt Regency \$62 room 615 637-1234 * Best Western \$47 room 615 521-5000

Free Airport Shuttle

Friday 8 AM to 9 PM Sunday 8 AM to 2 PM

Exhibitors

R. L. Drake * Japan Radio * OptoElectronics * Universal Radio * Many More

Sign up for the 1991 Monitoring Times Convention

Enclosed is my \$35 registration fee.

\$19.95 banquet payment (Buffet featuring baked lemon chicken & roast beef in wine sauce. Tax & tip incl.)

Name _____

Address _____

City _____ State/Prov. _____ Zip _____

Phone (_____) _____

Send your check or money order to Monitoring Times Convention, PO Box 98, Brasstown, NC 28902.

Schedule of Events

Friday, October 4

Noon

REGISTRATION

3:00 to 6:30 PM

EXHIBITS OPEN.

TOURS: 911,
Airport Tower

6:30 to 6:45 PM

WELCOME AND SPEAKER INTRODUCTION

7:00 to 8:00 PM

EVENING SEMINARS

Military Monitoring
with Larry Van Horn
and Jack Sullivan

**Cellular Surveillance
Techniques**
with Tom Bernie

QSLing
with Gerry Dexter

8:15 to 9:15 PM

Computers in Radio
with Jim Frimmel

Satellite Monitoring
with Ken Reitz

**Construction of a
Shortwave Station**
Slide Show from WWCR

Saturday, October 5

8:00 to 9:00 AM

REGISTRATION.

TOURS BEGIN: 911,
Channel 6 TV Station.
SPECIAL ATTRACTION:
Life Star Helicopter

9:00 AM

EXHIBITS OPEN, SEMINARS BEGIN

Utilities Monitoring
with Larry Van Horn

Used Equipment Buying
with Fred Osterman

Beginner's Antennas
with Bob Grove

10:15 to 11:15 AM

Scanning--Back to Basics
with Bob Kay

Shortwave Listening
Staff

Beginner's Utilities
with Larry Van Horn

11:30 to 12:30 PM

Unlicensed Broadcasters
with John Santosuosso

Scanners--Past & Present
with Bob Grove

Beginner's Receivers
with Larry Magne

2:00 to 3:00 PM

Aero Listening
with Jean Baker
and Jack Sullivan

**VHF/UHF
Communication Systems**
with Gene Hughes

Beginner's Q & A Forum
with Skip Arey

3:15 to 4:15 PM

**Choosing a Shortwave
Receiver**
with Larry Magne

Electronic Surveillance
with Howard Perry

Beginner's Aircraft
with Jack Sullivan

4:30 to 5:30 PM

Experts Forum
Group Q & A

5:30 to 7:00 PM

SWAP MEET

6:00 PM

EXHIBITS CLOSE

7:00 to 9:00 PM

BANQUET

Guest Speaker,
Larry Magne
Publisher, "Passport
to World Band Radio"

9:30 PM

HIDDEN TRANSMITTER HUNT

Sunday, October 6

9:30 to 10:30 AM

**Who's on the
Radio Spectrum**
with Bob Grove

**Choosing a Shortwave
Receiver**
with Larry Magne
(repeat of Sat. 3:15)

Beginning Ham Radio
with Skip Arey

10:45 to 11:45 AM

Utilities Monitoring
with Larry Van Horn
(repeat of Sat. 9:00)

Listening Laws
with Frank Terrenella

**SW--An International
Language**
with Kim Shippey

12:00 to 1:00 PM

Tips and Techniques
with Bob Grove

SEARCH and RESCUE in Cape Cod

Story and photos by Everett L. Slosman

"Mayday Mayday I'm on a reef and need help."

Mayday message received by USCG Group Woods Hole Search and Rescue, VHF Channel 16.

Summer sails into Cape Cod waters. One of the most easterly locations in the United States, tourists have been coming here ever since the Vikings and Pilgrims made their landfalls and established settlements.

Curving northward off the shoulder of Massachusetts, it looks like an arm flexed in a protective pose against the rugged Atlantic Ocean. Formed by the retreating glaciers that left scrubbed sand and screed stone, "the Cape" is dotted with hundreds of coves and inlets from Plymouth Harbor to Buzzard's Bay that offer safe havens to weekend sailors and fishermen alike.

The Cape Cod Canal, which isolates this peninsula from the mainland, connects the North Atlantic to Long Island Sound and provides a direct route for merchant ships.

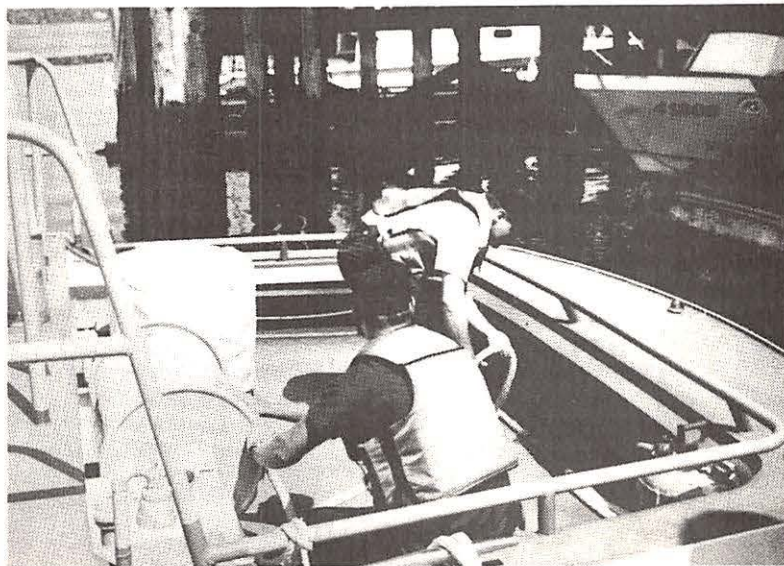
Each summer, thousands flock here to enjoy the beaches, sand dunes and wildlife. Many arrive via the Borne or Sagamore bridges trailing a boat while others sail their cabin cruisers into upscale resort marinas.

All this maritime traffic creates an industrial strength headache, says Lt. Hank Leeper, the U.S. Coast Guard public affairs representative at Station Woods Hole. So, from June to September, it's "heads up" time for the men and women who stand watch at Group Search and Rescue Operations (SAROPS).

Located in the extreme southwestern part of the Cape, Woods Hole Group services an Area of Responsibility (AOR) that covers Buzzards Bay, Nantucket Sound, Vineyard Sound, Cape Cod Bay, Provincetown (all Massachusetts), Rhode Island Sound, Block Island, Narragansett Bay, Newport, Mishaum Point (all Rhode Island), and the Georges Banks.

A significant portion of the fish consumed in the United States comes from the Georges Banks and the fleets that harvest the area are prime factors in the Northeast's economy.

So between the tourists and the "Captains Courageous," hardly a day goes by without someone calling "Mayday."



Preparing to get underway for an SAR mission at Woods Hole

Taking the Tour

From the outside, Woods Hole looks like almost any New England Coast Guard facility. A "Page Wire" style fence guards a three-sided perimeter. Dockside features assorted vessels moored tight, some awaiting the next SAR mission call.

There are the usual outbuildings, a two-story repair shop, and an administration building that houses SAROPS. In a restricted area next to the galley and its 24-hour coffee pot, the unit contains a radio room where specialists monitor marine traffic and an operations center for the mission director.

Radioman First Class Dan Mullins and Rick Sullivan conducted a tour of the radio system. Four in-line consoles take up most of the space. From October through May, usually only one operator stands watch. However, during tourist season, at least two ratings occupy the consoles around the clock. Each console monitors both 2182 kHz (HF marine) and VHF Channel 16 (156.8 MHz).

One unit is the "distress position." That duty operator concentrates on the Group's primary AOR and if a call comes through, can focus solely on that priority. He may choose to monitor or ignore out-of-area traffic as

necessary. Information about the status of other SAR units can be relayed to the mission controller along with normal area traffic without interfering with an ongoing operation.

Each console can switch to any marine frequency and become the "distress position." Longwave signals (500 kHz) go to the radio room at 1st District Boston.

Woods Hole no longer guards CB channel 9 for traffic. The Massachusetts State Police now provide that service and relay distress calls to the appropriate agency.

Signals arrive at Woods Hole from nearby Castle Hill, a Very High Site (VHS) receiving antenna. Similar VHS installations are located in Newport, Nantucket, and Provincetown at carefully selected locations.

For example, the antenna in Newport sits on a bridge and tops out at 350 feet in the air. Given the atmospheric vagaries encountered on the HF bands, especially in summer, decent height and a salt water ground are needed to ensure clean reception of distress calls.

However, calls are not always in the clear and understandable, so the radio room contains safeguards. All transmissions are recorded and can be reviewed, electronically cleaned, and clarified, if necessary. Overhead speakers and backwall units can be patched, muted, or brought



Lt. Chris Cunningham, SAR mission controller points to a recent rescue using the finely detailed operations room map.



Typical scene dockside at Woods Hole Station



Radioman Dan Mullins pulling watch at the "distress position." Note the ship status board and the reel to reel recorder.

to full volume as required.

From the radio room's standpoint, the station nearest the vessel with the clearest communications takes the call. Therefore, assistance will probably come from the nearest small boat station.

There are eight of these: Provincetown, Sandwich, Chatham, Nantucket, Martha's Vineyard, Woods Hole, Cappingville and Point Judith. An SAR Detachment on Block Island is under the command of Station Point Judith.

If the small boat station cannot handle the emergency or they need more sophisticated equipment, Group takes over. The idea is to insure professional SAR response anywhere in their 10,000 square mile zone.

The Mechanics of a Maritime Rescue

The mission controller has a variety of rescue craft available for emergency dispatch including 22, 41, and 44 foot utility and motor life boats and 82 and 110 foot patrol boats and cutters. A status board in the radio room lists all available vessels and their current assignments.

The larger ships sail in and out of various bases, often on assignment away from their home ports. It is not unusual for a bluewater SAR mission to be run with a vessel that just happened to be in the area.

If necessary, the mission controller can call on aircraft from nearby Air Station Cape Cod, located at Otis Air Force Base. Here an assortment of HC-130 four engine props, HU-25 Guardian jets, and HH-3F and HH-65 helicopters stand ready to run rescue sorties.

Lt. Chris Cunningham, one of the Group's controllers, explains the procedures. When a distress call comes in, the radio operator tries for the vessel's position, description, nature of the emergency, and the on-scene weather. Weather information becomes critical if it is necessary to dispatch a rescue flight.

Occasionally, says Cunningham, "an aircraft is doing something in the area and they hear something like a medevac (medical evacuation) or a PIW (person in the water)." In

those cases, "We'll let them be in charge."

According to the lieutenant, that happened a few times last year. Aircraft in the neighborhood heard a boat say "We've got a man overboard," or something similar, and they could locate the source by flying right to it.

Cunningham sums up his job in simple terms. "We organize the search and we tell what units to go where."

Drama in Real Life

The controller has two SARTel phones; direct links to the air station, all other Groups in the area, and to the 1st District Office. The following was a typical mission.

On 08 July 1990, Woods Hole Group received a report that the 65 foot lobsterboat *Claudia Nicole*, with four people on board, was taking water from an unknown leak and the vessel was about 150 nautical miles off Provincetown. Group immediately dispatched two helicopters and the cutter *Alert*. The swift response made the mission successful.

During the summer, a majority of the calls come from recreational boaters like this 12 July 1990 rescue. A 20 foot runabout, christened *Freedom*, was traveling at excessive speed in a fogged-in area near Gay's Head. *Freedom* took on the 63 foot cabin cruiser *Jet-Aire* and lost. SAR responded by launching a helo and rescued the people in the runabout. The cruiser put into a nearby marina for repairs.

After the summer, the workload skews more toward protecting the fishing fleet out of New Bedford, cruise ships, and merchant vessels. Occasionally, Group makes headlines, like when the *Bermuda Star* ran aground off Silver Beach in Buzzards Bay.

Group took the call and rescued passengers and crew. But, because the incident took place near one of the richer Cape Cod private playgrounds and there was a possibility of fouling the beaches, the news media took an instant interest.

Reporters rushed to the scene, chartered every vessel which would float, and clogged the waters. They talked about the Exxon Valdez,

property damages, possible loss of life and the proximity to the beaches.

Reporters interviewed every shipwreck expert on the Cape and there are a lot of them. Two generations ago many Cape Codders made a living as wreckers and salvors. Wreckers hung lanterns from exposed points to lure unsuspecting captains onto the rocks. then, when a ship beached, the salvors picked it clean.

People kept with tradition doing the same thing to the reporters: pickin' 'em clean.

Meanwhile the coasties responded with every vessel and piece of pollution control equipment available. Once the passengers were safe, Group notified the Marine Safety Office in Providence, who took charge of the cleanup operations and let Woods Hole go back to running SAR missions.

Hoaxes and Headaches

Last summer Group was plagued by a large number of hoax calls, mostly on channel 16. Other high incidence problems include boaters who accidentally trigger Emergency Position Indicating Radio Beacons. Recent legislation makes transmitting false Maydays a federal felony, and people who set off their EPIRB units are subject to heavy fines.

Two Stanford, Connecticut, boaters were recently indicted by a federal grand jury for sending false distress signals, lying to a government agency and conspiracy. After one hoax broadcast covered up a real emergency, resulting in the death of two commercial fishermen and a lot of criticism of the Coast Guard, they have no love for anyone who violates the law.

Though Group monitors VHF channel 16, it is often so crowded that pleasure boaters who need help do better by calling a marine operator, sort of a maritime 911 call.

Tables 1-3 should make monitoring Search and Rescue a little easier. Be sure to give them a try this summer. SAR frequencies produce the type of action and human drama seldom found anywhere else.

Table 1
SAR Communications Terminology and Codes

Airstation	Air base where Coast Guard helicopters and fixed wing planes are stationed. Usually given as "Airbase _____."	MSO	Marine Safety Officer
CAP	Civil Air Patrol. This organization cooperates when air searches are needed.	MV	Motor vessel.
CC	Cabin Cruiser	NAS	Naval Air Station.
Comm-sked	Communications schedule.	NMFS	National Marine Fisheries Service.
ELT	Emergency Locator Transmitter	NOK	Next of kin.
EMT	Emergency Medical Technician	OB	Outboard power plant.
EPIRB	Emergency Positioning Indicating Radio Beacon. Usually pronounced as "ee-purr-bh."	OPCON	Operations control, mission control.
ETA	Estimated Time of Arrival	OPS	Operations, operators.
Evac	Evacuation, evacuate (Medevac is a medical evacuation.)	"Pan"	Urgent call, but not a Mayday. Uses same calling procedure as Mayday.
FV	Fishing vessel.	PC	Pleasure craft or small boat.
IB	Inboard power plant.	POB	Persons on board.
IO	Inboard-outboard power plant.	PIW	Persons in water.
LB	Lobster boat.	Precom	Preliminary radio check.
MARB	Marine Assistance Radio Broadcast.	RHIB	Rigid Hull, Inflatable Boat.
MAROP	Marine Operator	RV	Research vessel.
Mayday	Grave danger. Phrase is repeated three times and then followed by "This is _____ (boat name repeated three times). Mayday _____ (boat name)." Vessel's location, reason for emergency call, number of persons aboard, boat's seaworthiness, and boat's physical description.	SARSAT	Search and Rescue satellite.
MLB	Motor Life Boat.	Securite	Pronounced "sec-curi-tay". Repeated three times preceding urgent message or Notice to Mariners.
		Sortie	An individual mission.
		TB	Tug boat.
		UMIB	Urgent Marine Information Broadcast.
		UTB	41 foot utility boat.
		YOA	Years of Age.

Table 2
Maritime Distress and Safety Frequencies

2182 kHz	International HF-SSB radiotelephony distress and calling frequency.	8416.5	MSI
2174.5	International NBDP distress frequency.	12290	HF-SSB
2187.5	International DSC distress and calling frequency.	12520	NBDP
3023	Manned space vehicles SAR, maritime mobile SAR.	12577	DSC
4210	MSI	12579	MSI
4125	Maritime mobile service distress frequency.	16420	HF-SSB
4177.5	NBDP	16695	NBDP
4207.5	DSC	16804.5	DSC
4209.5	NBDP coast station meteorological and navigation warnings and urgent information	16806.5	MSI
5680	Manned space vehicles SAR, Maritime mobile SAR	19680.5	MSI
6215	HF-SSB	22376	MSI
6268	NBDP	26100.5	MSI
6312	DSC	121.5 MHz	EPIRB distress tone
6314	MSI	156.3	Channel 6, SAR and intership
8291	HF-SSB	156.75	Channel 15, WX, Notice to Mariners, and Environmental
8364	Manned space vehicles SAR	156.8	Channel 16, VHF distress and calling channel. After contact vessels shift to 157.100 channel 22
8376.5	NBDP	243.0	EPIRB distress tone
8414.5	DSC	406.0	EPIRB distress tone with ship ID and registration digitally encoded. Commercial vessels.

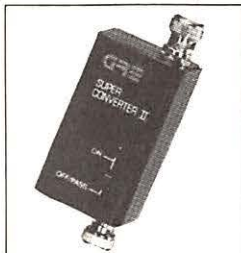
DSC Digital Selective Calling
EPIRB Emergency beacon using satellite reception for pinpointing location
HF-SSB High Frequency-Single Sideband
MSI Maritime Safety Information
NBDP Narrow-band Direct-Printing

Improve Your Scanning Coverage!

GRE America is proud to introduce a new family of products to enhance your scanning pleasure! First, GRE has designed the new **Super Converter 9001** for base model scanners. The 9001 converts 810 MHz - 950 MHz down to 410 MHz - 550 MHz. The 9001 is the perfect alternative to buying a new, expensive scanner covering the 800 MHz band. Next, GRE announces the new **Super Amplifier 3001** for base model scanners. The 3001 will increase gain by as much as 20 dB, and is engineered to help scanners with low sensitivity pull in weak signals. Both products use BNC connectors, (1) 9 volt battery and have an off/pass switch for returning to normal operation.



Super Converter 9001 & Super Amplifier 3001



Super Converter II



Super Amplifier



All-Band Antenna

U.S. & International Distributorship inquiries welcome. Please call GRE for further information!

Let GRE Manufacture Your Radio Products!

GRE America, Inc. is a leading OEM developer and manufacturer of radio telecommunications products such as:

- Cordless Telephones
- CB & Marine Radios
- Spread Spectrum "engines"
- Remote Monitoring Systems

If you need a high quality, cost competitive, reliable manufacturer, GRE will provide you with a free production quotation.

For more information, please call GRE at (800) 233-5973. GRE is a subsidiary of General Research of Electronics, Inc.

GRE GRE America, Inc.

GRE America, Inc.

425 Harbor Blvd., Belmont, California 94002

(415) 591-1400 Outside California: (800) 233-5973

Table 3
Selected Northeast Marine Coast Station - VHF FM

MHz	Call	Licensee	ID	MHz	Call	Licensee	ID
157.2 (simplex)	KJC737 KLU787 KQU556 KTD590 WHX752	Gr. Eastern Comm Liberty Comm NJ Bell Tel Portland Marine Niagara Comm	New Bedford MO Bridgeport MO (call sign only) Portland MO (call sign only)		KMB846 KQU620 KWB437 WBL	Direct Page Comm Coastal Comm Gr. Eastern Comm Kenilworth Elect	(call sign only) Camden MO New London MO (call sign only)
157.225/161.825	KEA693 KIL929 KQU620 KQU634 KXS281	NYNEX Mobile WJG Maritel Coastal Comm Niagara Comm Niagara Comm	New York MO (call sign only) Camden MO Hyannis MO Narragansett MO	157.325/161.925	KIZ309 KWB437 WHV979 WHU638	Niagara Comm Gr. Eastern Comm MATS	Nantucket MO New London MO (call sign only)
157.25/161.85	KEA693 KGW416 KLU788 KTA456 KWB437 KYB861 WHV451	NYNEX Mobile NYNEX Mobile Mobile Telec Tech Lakes Reg. Comm Gr. Eastern Comm Niagara Comm NJ Bell Tel	New York MO (call sign only) (call sign only) (call sign only) New London MO Gloucester MO (call sign only)	157.35/161.95	KCD817 KLG325 KGW292 KIZ309 KLU785 KTR948	Radio Telep Sys Arch Capitol Dist NJ Bell Tel Niagara Comm Gr. Eastern Comm Niagara Comm	Boston MO (call sign only) Toms River MO Nantucket MO Bridgeport MO Providence MO
157.275/161.875	KBK373 KIZ309 KXS281 KZN548 WHU742 WHW372	Coastal Comm Niagara Comm Niagara Comm NY Telephone Murray Cohen Lakes Reg. Comm	Camden MO Nantucket MO Narragansett MO Bay Shore MO (call sign only) (call sign only)	157.375/161.975	KJC737 KMC972 WHX748	Gr. Eastern Comm MATS Murray Cohen	New Bedford MO (call sign only) (call sign only)
157.3/161.9	KCD817 KEA693 KFL993 KGW378 KJC737	Radio Telep Sys NYNEX Mobile Arch Capitol Dist NJ Bell Tel Gr. Eastern Comm	Boston MO New York MO (call sign only) Atlantic City MO New Bedford MO	157.4/162.0	KGW415 KGW417 KGW418 KLU786 KQU555 KQU634 KTD590 KTR948 KVF856 WBL WHU738	NYNEX Mobile NYNEX Mobile NYNEX Mobile NYNEX Mobile Lakes Reg. Comm Niagara Comm Portland Marine Niagara Comm Coastal Comm Kenilworth Electr Niagara Comm	(call sign only) Plattsburgh MO (call sign only) (call sign only) Portsmouth MO Hyannis MO Portland MO Providence MO SW Harbor, Mo (call sign only) (call sign only)

Radio Portugal may be the country's best-known station in North America. But it's not the one that wields the power.

Shortwave

Portugal

by Larry Miller



The nation of Portugal bills itself as "The Atlantic Frontier of Europe." A 35,000 square mile rectangle of land carved out of western Spain, its modern frontiers are old and established, going back some 700 years to 1385, the year that the country officially gained its independence.

Portugal is the closest European country to West Africa and Central and South America -- a factor which led it, in the 15th century, to initiate the Age of Exploration. During this period of colonialization, Portugal built a large overseas empire ranging from Brazil in South America (now a Portuguese-speaking country in a continent dominated by Spanish) to Angola in southwestern part of what has been known as "The Dark Continent."

Within a mere hundred years, though, Portugal's power began to decline. In the 20th century, the country went through a number of changes, including a dictatorship, fourteen years of colonial wars in Africa, and, in 1974, a coup d'etat by the armed forces. That year the last of Portugal's overseas empire dissolved when Angola, Cape Verde, Guinea-Bissau and Mozambique were given their independence.

As a result of this wide-ranging past, Portuguese culture and language appears around the world in what would otherwise be considered some rather out-of-the-way places.

As was the case with many colonial powers, the government of Portugal sought to reinforce ties to the motherland by way of shortwave broadcasts. Operating under the watchful eye of

the government-owned Emissora Nacional de Radiodifusao (ENRD), Lisbon's Servico Ultramarino da Emissora Nacional sent a steady stream of Portuguese language programs out to places like Brazil, Mozambique, Timor, Macau, Cape Verde and Angola. Programs were both home service relays and specially prepared shows for the colonies.

The International Service, charged with producing pro-Portugal programs for the rest of the world, kept a busy schedule in English, French, German, Italian, Konkani, Portuguese and Spanish (See schedule.) Seven 100 kW transmitters — hardly the most powerful of their time but still nothing to sneeze at in the mid 1970s, — were located in Sao Gabriel.

Programs were varied and, even in 1974, broadcast live — no pre-taped programs from Lisbon. Every Monday night, shortwave enthusiasts tuned in the weekly DX program in English.

These weren't the only pre-coup shortwave voices from Portugal. In order to insure that national programming was reaching the outermost areas of the country, Emissora Nacional de Radiodifusao operated a low-power shortwave transmitter from Lisbon on 11925 kHz. On the air for all but 5 hours a day, its signal was regularly heard across portions of Europe and Northernmost Africa.

Another regularly heard shortwave voice from Portugal came from the Secretary of del Estado de Informacao e Turismo (SEIT). Primarily designed to lure tourists from Holland and Sweden, the broadcasts came in any language you wanted as long as it was Dutch or Swedish.

SEIT's daily one-hour tourist trap did not have its own transmitters. Instead, it rented time on Portugal's Radio Trans Europe, a facility given to selling time on its two 250 kilowatt transmitters. Broadcasters like Deutsche Welle (The Voice of Germany), Adventist World Radio



Top: Old Lisbon; Bottom: Radio Portugal Studio

1973 Radio Portugal International Service Schedule

0000-0200 6025, 11935 kHz
(Portuguese to Portuguese fishing fleet)
0100-0145 11840, 15315 kHz
(Spanish to South America)
0200-0245 6025, 11935 kHz
(English to North America)
0215-0300 11840 kHz
(French to Canada)
0245-0345 6025, 11935 kHz
(Portuguese to Portuguese fishing fleet)
0300-0345 11840 kHz
(English to Canada)
0345-0430 6025, 11935 kHz
(English to Portuguese fishing fleet)
0445-0700 6025, 9740 kHz
(Portuguese to Europe) 0700-0745 6025, 9740 kHz (French to Europe)
0730-0815 17880, 21495 kHz
(English to Australia, New Zealand)
0815-0900 17880, 21495 kHz
(English to Japan and the Far East)
1345-1430 17895, 21495 kHz
(English to the Far East)
1430-1515 17895, 21495 kHz
(Konkani to South East Asia)
1715-2100 9740 kHz
(Portuguese to Europe)
1815-1900 11875, 21495 kHz
(French to Africa)
1830-1915 6025 kHz
(French to Europe)
1900-2000 11875, 21495 kHz
(English to Africa)
1915-2000 6025 kHz
(Italian to Europe)
2000-2045 6025 kHz
(German to Europe)
2045-2130 6025 kHz
(English to Europe)
2130-0100 11840, 15315 kHz
(Portuguese to Portuguese fishing fleet)

and SEIT all lined up to buy a place on the ether.

Still another station, called Radio Renascença, held down a single frequency, 6155 kHz. A Catholic station, it opened its broadcast day with a gong, followed by a choir. The transmitter pumped out a princely 10 kW. But don't underestimate those 10,000 watts.

Radio Portugal Today

Radiodifusão Portuguesa (RDP) divides its foreign service into three parts: programs for Portuguese in Europe, an overseas service in Portuguese to the rest of the world, and a small foreign language service.

Today, most shortwave listeners seeking English broadcasts are probably not aware of Radio Portugal. It's an easily missed station on the dial and once found, it hardly proves itself to be among worldband radio's most dynamic. The Portuguese make no bones about it. They simply do not put a lot of emphasis on non-Portuguese language broadcasts.

Order Your FREE 'Skyvision Catalog Today

It's Loaded With Factory Fresh Satellite TV Products, "All At Discount Prices"

Call Toll Free 800-334-6455

International call 1-218-739-5231 Fax line 218-739-4879

- Complete Systems
- Upgrades
- 2 ft to 24 ft Dishes
- Parts
- Accessories



- Major Brands
- Factory Fresh
- USA Warranty
- Fast Delivery

Satellite TV Anywhere



WORLD SATELLITE TV AND SCRAMBLING METHODS

"The Technicians' Handbook"

This thorough text is a must-buy for technicians, satellite professionals and curious do-it-yourselfers.


The design, operation and repair of satellite antennas, feeds, LNBs, receivers and modulators are examined in detail. An in-depth study of scrambling methods and broadcast formats including the VideoCipher II, Oak Onon, FilmNet, Sky Channel, EuroCipher, D2 MAC, BSB and Teleclub Payview III. Circuit and block diagrams of all components are presented and clearly examined throughout the handbook. This information is a prelude to the chapters on troubleshooting and setting up a test bench.

This expert guidance on testing, servicing and tuning is complemented by a wealth of detailed illustrations.

340 pages, 8 1/2 x 11 over 200 photos, diagrams, wiring schematics and 16 tables / appendices / index
S&H \$5 (U.S.) \$39.95

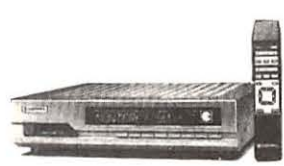
TUNE YOUR DISH TO ITS MAXIMUM!

"With The Pico" Signal Meter



A must for the serious dealer or satellite system owner. Saves time, frustration and money. Use when installing a new system, moving your dish, re-alignment of a dish that has been moved by wind, frost heaves etc. gets you right on the satellite belt for the best possible pictures!

Pico signal meter S&H \$6 \$69.95



IRDs / RECEIVERS / SYSTEMS

"Save \$\$\$ on Packages"

System package includes: ORBITRON 10 foot mesh dish, 40degree LNB, 18" Jack Arm, Feed-horn and Receiver/IRD (VC Iplus decoder) of your choice, plus a FREE detailed installation video.



PowerStar (5' x 2' x 1")

Plugs into Your Lighter!

Runs Appliances

NOW, house current from your car/truck /RV/boat... without a generator!

When the power fails, run an extension cord into the house and plug in the lamp and the TV. Also great for camping trips, tailgate parties and outdoor chores. Don't get caught in remote places like Alaska etc. without your Camcorder and PowerStar power converter.

Input: 10-15 volts DC
Output: 115 volts AC true RMS 55%
Frequency: 60 Hz 12%
Protection: Automatic overload shutdown & recovery
Power: 400 watts peak, 200 watt for two minutes minimum, 140 watt continuously
#POW200 S&H\$6 Wax \$149 NOW \$129



ORBITRON Mesh Dishes

"Quality Demonstrated by Performance"

Dish Size	Price
7ft dish & polar tracking mount	\$239
8.5ft	299
10ft	349
10ft H.D.	439
12ft	699

DO-IT-YOURSELF INSTALLATION VIDEO

"Now You Can Watch It Being Done"

Installing or "Tuning up" your satellite system made simple.

VHS or Beta S&H \$3 (U.S.) \$33.95

ACTUATORS

Model	Price
18" Superjack II	\$14 \$89
24" Superjack XL ball	15 139
24" Venture acme	15 129
51" JGS acme	22 219

Send in coupon or call toll free

All Major Credit Cards Accepted

Skyvision Inc.

2052 College Way Fergus Falls, MN 56537 - Toll Free 800-334-6455

Mail in coupon or call Toll FREE today for the SKYVISION Satellite TV Product Catalog

Delivered free to your mail box in U.S. and its holdings

• International requests add \$8.00 to cover shipping and handling

☐ **Send Skyvision Satellite TV Products Catalog**

Name _____ Phone () _____

Address _____

City _____ State _____ Zip _____

Install A System, Upgrade & Repair Yourself And Save \$\$\$

According to the director of the international service, Garcia Marques de Freitas, the objectives of the station "are the strengthening of our relations with Portuguese emigrants, the increase of our cooperation with countries with the same language, to give independent news, to reflect Portuguese opinion and project Portuguese life, culture and developments in science and industry." Programs in languages other than Portuguese are added as little more than a footnote.

The English schedule, for example, is short and sparse, a mere thirty minutes each day to North America. In fact, in the entire year Radio Portugal offers its worldwide listeners only 520

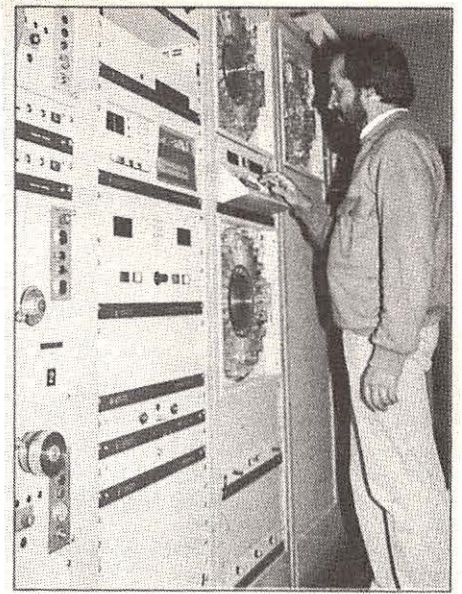
hours of English programming — and they don't make it easy to find.

With the exception of the 0230-0300 UTC transmission to the Americas (9600, 9705, 9765 and 11765 kHz), all other English transmissions are carried on one single frequency while those in Portuguese can go as high as six. There are no English transmissions on the weekends. (The Americas transmission runs Tuesday through Saturday). Other languages fare even worse: each day, French gets an hour on one frequency; Italian just 30 minutes. And that's it.

Portugal's radio flotilla is a bit leaky as well. The timing of programs, especially news bulletins, is subject to considerable variation. You'll



Radio Renascença Broadcast Studio



Radio Renascença

also hear RDP carrying continuous music at odd times or extending scheduled programs on some frequencies outside normal transmission times. In all, it's a sad package for a country that at one time dominated the globe.

Radio Renascença

Radio Renascença, on the other hand, represents Portugal well. It began broadcasting on New Year's Day 1937 and has grown steadily ever since.

A Catholic radio station, it has enormous influence over vast segments of the population. Its daily *Notas de Abertura* ("Opening Statements") are seen as the official view of the Catholic Church and seek to guide not only the people but the government in the ways of Christ. No one in the Portuguese community seems to resent this. Politicians at all levels of government

actively seek its good counsel.

Indeed, Radio Renascença is a power to be reckoned with. Backed in part by Rome, it has, says one government report, "more listeners than the total of the four state-owned radio channels or of the whole 324 local stations." Audience loyalty is reinforced in the Portuguese community by sponsoring and even organizing sporting events, informal town picnics and concerts by the station's choir.

Perhaps the one event that forever engraved Radio Renascença into the hearts of Portuguese people around the world was the revolution. "During the difficult times of April 1974, it was Radio Renascença that the people tuned to," says one station official. "It was a comforting voice amidst the turmoil."

Not only did the station continue to represent traditional Portuguese Christian values, but the independence and veracity of the station's news-

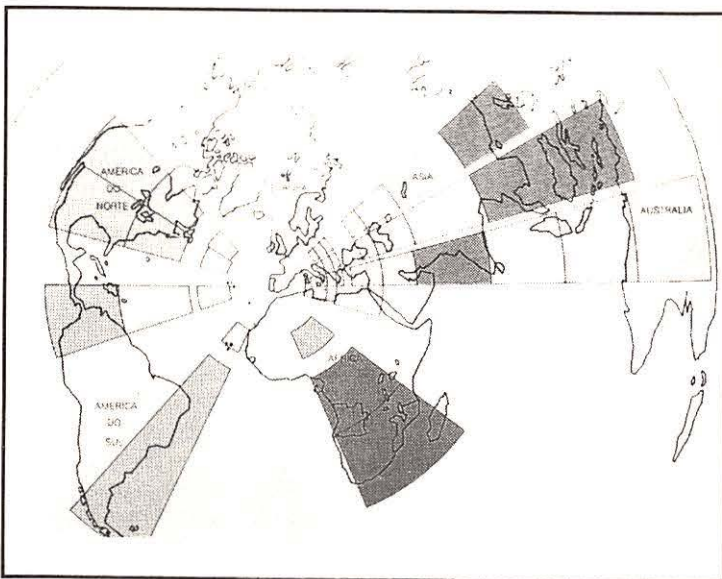
casts made it the country's sole source of unbiased information. The station's credibility — already high before the coup — skyrocketed as the rest of Portuguese radio was nationalized under the military government. "The aim of the station," says one official, "is always the common good of Portuguese people."

Unlike other stations, it receives no funding from either license fees or from the state. Instead, Radio Renascença raises its operating

Current Radio Portugal English Schedule

0230-0300 9600, 9705, 9765, 11765
(Tuesday through Saturday to the Americas)
1600-1630 15425
(Monday through Friday to the middle East and Asia)
1900-1930 11740
(Monday through Friday to Europe)
2000-2030 15250
(Monday through Friday to Europe)

*During winter time in Portugal, most programs are broadcast one hour earlier.



Target areas for Radio Portugal

funds from the sale of advertising. Additional funding comes from the League of Friends (LAR), an association created under Concordat between Portugal and the Holy See. Financially, the station is on solid ground, its gross value being estimated at some 1,278,285 thousand Escudos. It owns its own printing presses and provides full-time employment to some 350 people; part-time to almost two hundred.

Portugal's self-proclaimed "electronic temple" currently broadcasts on shortwave using a single 100 kilowatt transmitter with directional antennas to Europe (1800-1900 UTC on 9680 kHz) and Brazil (0015-0115 UTC on 9600 kHz). There are no Saturday or Sunday transmissions and everything is in Portuguese. However, there are plans to direct similar broadcasts to the United States in the near future and English may be considered. Later on, the station also plans on adding a broadcast to southern Africa.

mt

COMMUNICATIONS ELECTRONICS INC.

Emergency Operations Center has expanded to our new two acre facility and World Headquarters. Because of our growth, CEI is now your *one stop source* for emergency response equipment. When you have a command, control or communications need, essential emergency supplies can be rushed to you by CEI. As always, for over twenty two years, we're ready, willing and able to help.

Our RELM two-way radio transceivers were especially created for government agencies. When you need to talk to police, fire, ambulance, or state, federal and international response forces, RELM transceivers may be quickly programmed for up to 48 frequencies. Listed below, are some of our most asked about transceivers. For additional assistance, call CEI at 313-996-8888.

NEW! RELM® RSP500-A

List price \$465.00/CE price \$319.95/SPECIAL
20 Channel • 5 Watt • Handheld Transceiver
Frequency range: 148-174 MHz. continuous coverage. Will also work 134-148 MHz. with reduced performance. The RELM RSP500-A is our most popular programmable 5 watt, 20 channel handheld transceiver. You can scan 20 channels at up to 40 channels per second. It includes CTCSS tone and digital coded squelch. Snap on batteries give you plenty of power. Additional features such as time-out timer, busy-channel lockout, cloning, plug-in programming and IBM PC compatibility are standard. It is F.C.C. type accepted for data transmission and D.O.C. approved. We recommend also ordering the BC45 rapid charge 1 1/2 hour desk battery charger for \$99.95, a deluxe leather case LC45 for \$48.95 and an external speaker microphone with clip SM45 for \$59.95. Since this radio is programmed with an external programmer, be sure to also order one PM45 at \$74.95 for your radio system.

NEW! RELM® UC102/UC202

List price \$128.33/CE price \$79.95/SPECIAL
CEI understands that all agencies want excellent communications capability, but most departments are strapped for funds. To help, CEI now offers a special package deal on the RELM UC102 one watt transceiver. You get a UC102 handheld transceiver on 154.5700 MHz., flexible antenna, battery charger and battery pack for only \$79.95. If you want even more power, order the RELM UC202 two watt transceiver for \$114.95.

NEW! RELM® RH256NB-A

List price \$449.95/CE price \$299.95/SPECIAL
16 Channel • 25 Watt Transceiver • Priority Time-out timer • Off Hook Priority Channel
The RELM RH256NB is the updated version of the popular RELM RH256B sixteen-channel VHF hand mobile transceiver. The radio technician maintaining your radio system can store up to 16 frequencies without an external programming tool. All radios come with CTCSS tone and scanning capabilities. This transceiver even has a priority function. Be sure to order one set of programming instructions, part # PI256N for \$10.00 and a service manual, part # SMRH256N for \$24.95 for the RH256NB. A 60 Watt VHF 150-162 MHz. version called the RH606B is available for \$429.95. A UHF 15 watt, 16 channel similar version of this radio called the LM15B-A is also available and covers 450-482 MHz. for only \$339.95. An external programming unit SPM2 for \$49.95 is needed for programming the LMU15B UHF transceiver.

NEW! RELM® LMV2548B-A

List price \$423.33/CE price \$289.95/SPECIAL
48 Channel • 25 Watt Transceiver • Priority
RELM's new LMV2548B gives you up to 48 channels which can be organized into 4 separate scan areas for convenient grouping of channels and improved communications efficiency. With an external programmer, your radio technician can reprogram this radio in minutes with the PM100A programmer for \$99.95 without even opening the transceiver. A similar 16 channel, 60 watt unit called the RMV60B is available for \$489.95. A low band version called the RML60A for 30-43.000 MHz. or the RML60B for 37-50.000 MHz. is also available for \$489.95.

RELM® Programming Tools

If you are the dealer or radio technician maintaining your own radio system, you must order a programming tool to activate various transceivers. The PKCIT010 for \$149.95 is designed to program almost all RELM radios by interconnecting between a MS/DOS PC and the radio. The PM100A for \$99.95 is designed to externally program the RMV60B, RML60A, RML60B and LMV2548 radios. The SPM2 for \$49.95 is for the LMV25B and LMU15B transceivers. The RMP1 for \$49.95 is for the RMU45B transceiver. Programmers must be used with caution and only by qualified personnel because incorrect programming can cause severe interference and disruption to operating communications systems.

★★★ Uniden CB Radios ★★★

The Uniden line of Citizens Band Radio transceivers is designed to give you emergency communications at a reasonable price. Uniden CB radios are so reliable they have a two year limited warranty.

PRO310E-A3 Uniden 40 Ch. Portable/Mobile CB...\$72.95
PRO330E-A3 Uniden 40 Ch. Remote mount CB...\$99.95
GRANT-A3 Uniden 40 channel SSB CB mobile...\$152.95
WASHINGTON-A Uniden 40 ch. SSB CB base...\$209.95
PC122-A3 Uniden 40 channel SSB CB mobile...\$113.95
PC86A-A Uniden 40 channel CB Mobile...\$78.95
PRO510XL-A3 Uniden 40 channel CB Mobile...\$34.95
PRO520XL-A3 Uniden 40 channel CB Mobile...\$49.95
PRO535E-A Uniden 40 channel CB Mobile...\$73.95
PRO538W-A Uniden 40 ch. weather CB Mobile...\$78.95
PRO640E-A3 Uniden 40 ch. SSB CB mobile...\$133.95
PRO810E-A Uniden 40 channel SSB CB Base...\$174.95

★★★ Uniden Radar Detectors★★★

Buy the finest Uniden radar detectors from CEI today.
CARD-A3 Uniden credit card size radar detector...\$127.95
RD3XL-A3 Uniden 3 band radar detector...\$124.95
RD9GTL-A Uniden "Passport" size radar detector...\$89.95
RD9XL-A3 Uniden "micro" size radar detector...\$107.95
RD25-A Uniden visor mount radar detector...\$54.95

Bearcat® 200XLT-A

List price \$509.95/CE price \$239.95/SPECIAL
12-Band, 200 Channel • 800 MHz. Handheld Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Bearcat 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the BC 100XLT-A3 for only \$179.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-A

List price \$549.95/CE price \$239.95/SPECIAL
12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC Bands
29-54, 118-174, 406-512, 806-912 MHz. Now...nothing excluded in the 806-912 MHz band. The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 1/4" x 4 1/2" x 12 1/2". If you do not need the 800 MHz. band, a similar model called the BC 210XLT-A is available for \$178.95.

NEW! Uniden® MR8100-A

Call 313-996-8888 for special CEI pricing
12-Band, 100 Channel • Surveillance scanner Bands
29-54, 116-174, 406-512, 806-956 MHz. The Uniden MR8100 surveillance scanner is different from all other scanners. Originally designed for intelligence agencies, fire departments and public safety use, this scanner offers a breakthrough of new and enhanced features. Scan speed is almost 100 channels per second. You get four digit readout past the decimal point. Complete coverage of 800 MHz. band when programmed with a personal computer. Alphanumeric designation of channels, separate speaker, backlit LCD display and more. To activate the many unique features of the Uniden MR8100 a computer interface program is available for \$19.95. Due to manufacturers' territorial restrictions, the MR8100 is not available for direct shipment from CEI to CA, OR, WA, NV, ID or UT.

NEW! Ranger® RCI2950-A3

List price \$549.95/CE price \$259.95/SPECIAL
10 Meter Mobile Transceiver • Digital VFO Full Band Coverage • All-Mode Operation Backlit liquid crystal display • Repeater Splits RIT • 10 Programmable Memory Positions
Frequency Coverage: 28.0000 MHz. to 29.6999 MHz. The Ranger RCI2950 Mobile 10 Meter Transceiver has everything you need for amateur radio communications. The RF power control feature in the RCI2950 allows you to adjust the RF output power continuously from 1 watt through a full 25 watts output on USB, LSB and CW modes. You get a noise blanker, roger beep, PA mode, mike gain, digital VFO, built-in S/R/M/OD/SWR meter. Frequency selections may be made from a switch on the microphone or the front panel. The RCI2950 gives you AM, FM, USB, LSB or CW operation. For technical info, call Ranger at 619-259-0287.



RELM
LMV2548B
Only \$289.95

OTHER RADIOS AND ACCESSORIES

XC365-A Uniden Ultra Clear Plus Cordless Phone...\$89.95
CT785S-A Uniden speakerphone cordless phone...\$109.95
BC55XLT-A Bearcat 10 channel scanner...\$114.95
AD100-A Plug in wall charger for BC55XLT...\$14.95
PS001-A Cigarette lighter cable for BC55XLT...\$14.95
VC001-A Carrying case for BC55XLT...\$14.95
BC70XLT-A Bearcat 20 channel scanner...\$159.95
BC142XL-A Bearcat 10 ch. 10 band scanner...\$84.95
BC147XLT-A Bearcat 16 ch. 10 band scanner...\$94.95
BC172XL-A Bearcat 20 ch. 11 band scanner...\$134.95
BC177XLT-A Bearcat 16 ch. 11 band scanner...\$134.95
BC590XLT-A Bearcat 100 ch. 11 band scanner...\$194.95
BC760XLT-A Bearcat 100 ch. 12 band scanner...\$254.95
BC002-A CTCSS tone board for BC590/760XLT...\$54.95
BC003-A Switch assembly for BC590/760XLT...\$22.95
BC855XLT-A Bearcat 50 ch. 12 band scanner...\$199.95
BC1-A Bearcat Information scanner with CB...\$129.95
BC330A-A Bearcat Information scanner...\$99.95
BC560XLT-A Bearcat 16 ch. 10 band scanner...\$94.95
BP205-A Ni-Cad batt. pack for BC200/BC100XLT...\$39.95
TRAVELLER2-A Grundig shortwave receiver...\$89.95
COSMOPOLIT-A Grundig shortwave receiver...\$199.95
SATELLIT500-A Grundig shortwave receiver...\$679.95
SATELLIT650 Grundig shortwave receiver...\$949.95
ATS803A-A Sangean shortwave receiver...\$159.95
74102-A Midland emergency weather receiver...\$39.95
77116-A Midland CB with VHF weather & antenna...\$66.95
77118-A Midland CB mobile with VHF weather...\$62.95
77913-A Midland CB portable with VHF weather...\$79.95
76300-A Midland CB base station...\$92.95
FBE-A Frequency Directory for Eastern U.S.A...\$14.95
FBW-A Frequency Directory for Western U.S.A...\$14.95
RFD1-A MI, IL, IN, KY, OH, WI Frequency Directory...\$14.95
RFD2-A CT, DE, MA, NH, RI, VT Directory...\$14.95
RFD3-A DE, ME, MD, NJ, NY, PA, VA, WV Dir...\$14.95
RFD4-A AL, AR, FL, GA, LA, MS, NC, PR, SC, TN, VI...\$14.95
RFD5-A AK, ID, IA, MN, MT, NE, ND, OR, SD, WA, WY...\$14.95
RFD6-A CA, NV, UT, AZ, HI, GU Freq. Directory...\$14.95
RFD7-A CO, KS, MO, NM, OK, TX Freq. Directory...\$14.95
PWB-A Passport to World Band Radio...\$16.95
ASD-A Airplane Scanner Directory...\$14.95
TSG-G7 "Top Secret" Registry of U.S. Govt. Freq...\$16.95
TTC-A Tune in on telephone calls...\$14.95
CBH-A Big CB Handbook/AM/FM/Freeband...\$14.95
TIC-A Techniques for Intercepting Communications...\$14.95
RRF-A Railroad frequency directory...\$14.95
EEC-A Embassy & Espionage Communications...\$14.95
SMH-A2 Scanner Modification Handbook, Vol. 2...\$18.95
LIN-A Latest Intelligence by James E. Tunnell...\$16.95
A80-A Magnet mount mobile scanner antenna...\$34.95
A70-A Base station scanner antenna...\$34.95
USAMM-A Mag mount VHF ant. w/ 12' cable...\$39.95
USAK-A 3/4" hoop mount VHF ant. w/ 17' cable...\$34.95
Add \$4.00 shipping for all accessories ordered at the same time.
Add \$15.00 shipping per radio and \$4.00 per antenna.

BUY WITH CONFIDENCE

Michigan residents please add 4% sales tax or supply your tax I.D. number. Written purchase orders are accepted from approved government agencies and most well rated firms at a 10% surcharge for net 10 billing. All sales are subject to availability, acceptance and verification. Prices, terms and specifications are subject to change without notice. All prices are in U.S. dollars. Out of stock items will be placed on backorder automatically or equivalent product substituted unless CEI is instructed differently. A \$5.00 additional handling fee will be charged for all orders with a merchandise total under \$50.00. Shipments are F.O.B. CEI warehouse in Ann Arbor, Michigan. No COD's. Not responsible for typographical errors.

Mail orders to: Communications Electronics, Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add \$15.00 per radio for U.P.S. ground shipping and handling in the continental U.S.A. For Canada, Puerto Rico, Hawaii, Alaska, or APO/FPO delivery, shipping charges are two times continental U.S. rates. If you have a Discover, Visa, American Express or MasterCard, you may call and place a credit card order. 5% surcharge for billing to American Express. For credit card order, call toll-free in the U.S. Dial 800-USA-SCAN. For information call 313-996-8888. FAX anytime, dial 313-663-8888. Order today.

Scanner Distribution Center* and CEI logos are trademarks of Communications Electronics Inc. Sale dates 3/15/91 - 10/31/91 AD #032591-A Copyright © 1991 Communications Electronics Inc.

**For more information call
1-313-996-8888**

Communications Electronics Inc.

Emergency Operations Center

P.O. Box 1045 □ Ann Arbor, Michigan 48106-1045 U.S.A.
For orders call 313-996-8888 or FAX 313-663-8888

The Fascination of Vintage Radio

Story and photos by Linton G. Robertson

An old radio tube lying with a pile of junk in a cardboard box, a musty wooden box with all sorts of mysterious wiring and odd whatnots in it, disused for time out of mind, a lonely looking horn speaker three sizes too big to be real lying under a heap of rubbish -- well, any one of these things can turn the most rational, sane and sturdy personality into a raving antique radio fiend, given half a chance and fertile soil.

The stimulus may differ from person to person, but give most people who have any interest in radio, antiques, or communications half a chance, and it's a good chance that before long a full blown case of collectomania will develop.

Vintage Radio: Where to Start?

Well, as with most sorts of pastimes, hobbies or avocations, there are different approaches depending upon your motivation for getting involved with the pursuit in the first place. Although we are mostly going to be concerned with the radios themselves, and the best way to get started collecting, restoring and caring for them, some overview of the hobby in general is necessary first.

Vintage and antique radio buffs seem to be divided into many different camps these days. For the sake of convenience I shall refer to them here as Memorabiliasts, Historians, Constructors and Restorationists.

- The Memorabiliasts are primarily concerned with radio trinkets. Every conceivable artifact relating to it is avidly sought after and cherished: old posters, radio equipment advertisements, catalog listings, pins, badges, displays and so on.

- The Historians are very interesting types. These people are a most valuable source of information when it comes to historical facts, figures, and wild tales, all true, naturally. Interesting anecdotes about the personalities of famous persons of radio fame form a good part of their diet. They are truly interesting people to meet, and the pursuit of oldtime radio would be lacking without them.

- The Constructors, or Constructionists, if you prefer, find great delight in creating authentic old-time receiving and transmitting apparatus.



If portability is your thing, try this 1947 Zenith Transoceanic. Weighing in at about sixteen pounds, it has seven 1-volt tubes and a 117 volt rectifier. Power can be from AC, DC, or batteries. Coverage is AM BCB and the major international shortwave bands. A four-switch "Radiorgan" control tailors the audio to anyone's liking.

Many of these are amateur radio operators, and regularly meet on the air in either informal get-togethers or actual contests using the rigs that they have created. Should one of these contests be in progress, it is not too hard to spot them on the air. Just listen for that old-time sound. You can't miss it. It may remind you of a sackful of cats rolling down a hill.

- The Restorationists are probably the least sane of the three. Restorationists will cackle with maniacal glee over the find of a bleached-out, burned out old mahogany box, stay until dawn with a sick radio trying to get that last adjustment "just right," grow positively hallucinogenic inhaling the most vile combinations of refinishing chemicals imaginable, shock themselves into next Wednesday touching wires they have no business to touch, and go straight to the poorhouse buying that "last radio for my collection."

"Yes, I know the car needs new tires, but gee, honey, this is a real McMurdo Silver . . . you say that if I bring it home I'll be wearing it inside of two minutes? Aw, gee, honey, you're so mean . . ."

One thing's for sure though, they're definitely not in it for the money. They treasure old radios for things in themselves, and lovingly restore them until they look and play like new.

In short, there seems to be quite a lot of activity in Vintage Radio these days, be it from the trendy, the romantic, or the just plain odd. Should your interest run to restoration, well, certainly there is a great deal to be done, as there are probably many sets out there still awaiting discovery. Although vintage radios are getting harder to find, keep in mind that there are probably still lots of beautiful radios out there moldering away in a closet, basement or Aunt Jenny's attic. However, finding a nice set can be difficult and expensive.

Vintage Radio without Bankruptcy

Well, there is always the local antique shop. This is fine if you absolutely have no time whatsoever to do some footwork, or are independently wealthy. Believe it, 90 percent of the time you are going to pay an absolutely outrageous price whether the radio is full restored or in need of serious repair. If you don't happen to have an oil well in your backyard, you might consider some of the following alternatives:

1. *Radio amateur swapmeets:* These interesting affairs are usually held anywhere from once a month to once a year, depending upon the size of the ham radio community in your area.

You're probably wondering what hams have in common with vintage gear. Well, it's a great deal more than you might think. Many of today's radio amateurs got their start when radio was still very young. As hams generally have an absolute loathing to throw away anything at all, they tend to keep stuff time out of mind.

2. *Estate sales:* This is promising, but usually only on a small scale. If there's too much publicity, e.g. public advertisements, announcements, etc., the professional antique collectors and the speculators usually move in and jack the bidding up quite a bit. Still, they want to make a buck, so the price may not be as high as you might think. It's worth a shot, anyway.

3. *General swapmeets:* These usually bear little fruit, but once in a great while you might find something, even if it's no more than a disconnected part or two. It's rare to find anything at all at these things.

4. *Friends and relatives:* This can be very promising, especially if you happen to have a large family. If any of them are living in the same house they've inhabited for a good few decades, well, there's a very likely spot to look, indeed.

So let's assume you've been successful, and have just walked through your front door with the thing under your arm, or, as is usually the case with both arms more than full and a double hernia. Now comes the fun part.

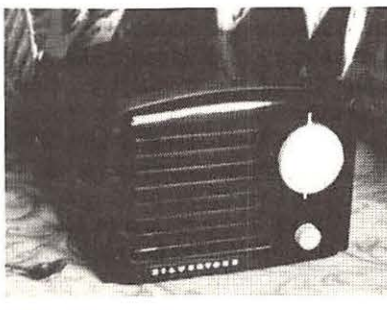
Restoration without Tears

A word of warning: do NOT, DO NOT succumb to that most human of all urges and turn it on. You run the risk of literally "firing up" your set. Old insulation may be shot, old power capacitors broken down, and if you throw the switch on a set in this condition, you very well may damage some very hard-to-find components as well as make a great amount of extra work for yourself.

A great deal of literature has been written lately about the restoration of vintage radios, so there is no shortage of written materials to help you in your project. Order from a house that deals in nothing but vintage radio or vintage radio memorabilia. They will be most helpful.

Now come the weeks, perhaps months, of patient tinkering, soldering, cutting, sanding, patching, going blind till 3 a.m. looking at a schematic designed for a midjet, and all the other wonderful things that await you. Hours and hours of micro-surgery on parts so brittle they come apart at the slightest touch, and always learning, learning, learning. In an unguarded moment, you finally admit it: "Boy, I'm really having fun." Your spouse overhears you and starts dialing the state mental hospital.

Finally, the finish is dry, the electronics restored, and the knobs gleam with a luster that is positively unearthly. As your heart leaps to your throat, you reach for the power switch,



The other end of the spectrum, another Silvertone, but a baby brother to the console. This little fellow was made about 1947, tunes BCB AM only, and has four tubes. This AC-DC model has a resistance cord, and surprisingly good audio reproduction for its small size. The case is Bakelite. You don't need a garage to enjoy this hobby.



If your taste runs to large objects and you have an appreciation for fine woodwork, a console may be just the thing for you. This 1941 Silvertone model 7048 has some very nice mahogany on it. The radio has eight tubes and covers AM BCB and 6-18 MHz shortwave, including two broadcast sections for 31 and 25 meters.

AMIGA + ICOM R7000

The Ultimate Scanning Combination. !!!
Finally the power of the Amiga can control the ICOM R7000.
* The ONLY scanner control system that directly generates SPEECH!
* The Amiga can say the frequency, time and even the users comment!
* The Amiga also directly controls the tape recorder, by channel!
Imagine the possibilities, after an automated logging session a tape may be played back with hit activity (no dead time) and accompanying time and/or frequency information. All hit activity will be shown in high resolution graphics and may be saved to disk. Each individual channel (up to 1024 per file) may control:
Lockout (skip channel), Mode (AM / FM / FMN / SSB), Say the frequency, Say the time, Say the users comment, (up to 80 characters long per channel), and / or record the hit on a tape recorder.
Scans over 1300 channels per minute on any Amiga.
Global controls can also enable / disable the speech and record functions. User or auto scaled high resolution graphs display current activity and log. Extremely powerful scan delays. May scan by comment. Does NOT need Icoms speech board or Icoms CI-V interface, no radio modifications required. Fully mouse driven, menus, icons, built in editor etc. Range scan. Autoscan mode may generate scan files with date and time log. ASCII file format. Fully multitasking. Requires 1 MByte ram. WB2.0 compatible. Many more features.

Includes custom hardware interface, SCAN7000 software, example scan files, owners manual and U.S. shipping.

\$149 (VISA / M-C / check / money order)

R71A Future Scanning Systems.

Coming! 406 N. Delaware
Dewey OK 74029
tel. (918)-534-3210

demo disk, example scan files and manual \$15 (refundable)

Computer Control of Your Radio



SCANCAT

Computer Aided Software control of:
Kenwood R-5000 & TS-440
Yaesu FRG-9600 & FT-757GX
NEW !! NRD - 525

NOW! AOR - 3000 with SPECTRUM ANALYSIS

Greatly enhance all your radio's functions with software control. PLUS our program includes a built in terminal program for your TNC. Pop-up menu windows and help screens. Fully menu driven and user friendly. Supports color & B&W monitors. Log found frequencies to disk files (Auto Log with AOR3000 !!!), complete with descriptions. Up to 500 frequencies per file. Unlimited disk files that save Description, mode and comments of each frequency. Scan disk files or between frequencies with variable delays and programmable step rates. Search disk files by descriptions, programmable lock outs. 30 programmable presets accessible by a single keystroke. Requires MS-DOS, 1 serial port & interface (not included).



\$49.95 PPD

Visa - Mastercard or COD
Includes "top200" Frequency file N/C



Fully operational demo \$5.00 (refundable with purchase)
J & J Enterprises - 4001 Parkway Dr. - Bossier City, LA 71112
ORDER DESK - PH. 318-631-3081 (10-5 Central)

PC Software by W2XQ

**Japan Radio Company
NRD-535**

Rx control software for the IBM PC. Memory & Event Management, Eng Lang SWBC Schedules. Also for **NRD-525, Kenwood R-5000**. Send SASE for catalog or download info from BBS 609-859-1910.

TRS Consultants

PO Box 2275-MT
Vincentown, NJ 08088-2275
609-859-2447 | Fax 609-859-3226

Tell them you read about it
in **MONITORING TIMES**.

thinking, "It worked on the test bench last night. Will it work now, here, with all these people I stupidly invited over for this event?" As you rock the switch over, there is a soft click, followed a moment later by a soft hum. Then, suddenly it actually speaks.

"This is WLS, Chicago . . . KOB, Albuquerque, good evening . . . You are tuned to Radio Beijing . . ."

There are simply no words to describe the feeling that you'll get when, for the first time, fully assembled, you hear it play. Welcome to the fraternity. Your life and storage space will never be the same.

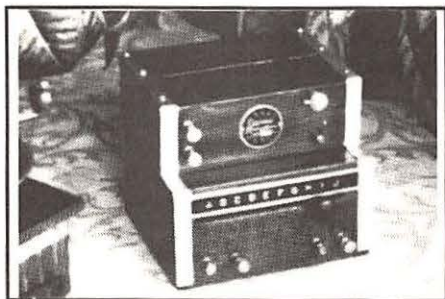


1. Anyone desiring a catalog chock full of books, parts, tubes, and support material may write to Antique Electronic Supply, 688 W. First Street, Tempe, AZ 85281.

2. Another good source for parts, and especially schematics and documentation generally is Puett Electronics, Box 28572, Dallas, TX 75228

3. For those interested in joining an organization devoted strictly to old time radio, write to the Antique Wireless Association, Box 637, Penn Yan, NY 14527

The AWA puts out a fine quarterly publication called "The Oldtimer's Bulletin," which always has good stories, articles, and frequently carries want ads for radios, parts, etc..



A 1919 crystal radio made by the Commerce Radiophone Corp. of Detroit. No amplification here, folks -- huge antennas and lots of ear strain.



Detail of the "cat's whisker" and galena crystal assembly. One spent quite a good deal of time hunting around on the surface of the crystal for the "hot spot."

A Surge Limiter for Vintage Radio Receivers

"Real radios glow in the dark." So proclaimed a tee shirt I saw at a local ham swapmeet. Personally, I couldn't agree more. But there are times when you'd like to have them glow just a little more slowly.

Consider: vacuum tubes are not getting any easier to find, or cheaper to acquire as time goes by. Consider the fact that most of the wear to the vacuum tubes in those nice old radios of yours occurs right when you turn on the current, and 117 VAC slams right through the delicate old thing.

Filaments hate that. Not only the tubes, but some other components in older tube sets take this sort of thing rather badly after a while, finally throwing up their hands and going toes up. But with the simple device described here, tube life can be extended at least 300 percent, and the rest of your set's touchier components will be treated to a nice slow wake-up as well, thus preserving their life too.

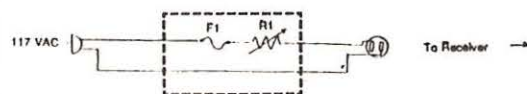
Construction is easy, taking only an hour or so, and will eventually save you an awful lot of future expense and time searching for a replacement for that rare tube.

Thermistors have been used for a long time in the electronics industry in everything from television sets to Nicad rechargers. These very useful devices vary their resistance according to how much heat they generate as they oppose the flow of current. Depending upon whether they have a negative or a positive temperature coefficient, they either grow more resistive as their internal temperature rises (positive temperature coefficient), or less resistive (negative temperature coefficient).

The type used here is the negative type, and is of an order that can probably handle up to two or three amps. Its function is simplicity itself: turn the current on, and the thermistor, being cold, opposes the flow with about 120 ohms. With most receivers this will start the set out at about 40-60 volts, a very gentle wake-up indeed. Over the next 15 seconds or so, the thermistor heats up and the resistance presented drops to one ohm or less.

The voltage drop that results from the residual resistance of the thermistor is usually negligible. I have seen it run equipment rated at 90 watts drop a 117 VAC line down to around 115 VAC or so, usually not enough to trouble most vacuum tube receivers.

Of course, very light or very heavy loads will necessitate a different thermistor than the one chosen for this device. However, the ther-



Parts List

R1: 120 Ohm Neg. Coeff. Thermistor, Keystone Type CL- 90, Newark Electronics Stock #81F3393

Case: Radio Shack #270-230

Thermistor Tie Point: Radio Shack #274-688

Fuse Holder: Radio Shack #270-364

Feed-Thru Strain Relief: Radio Shack #278-1636

Figure 1: Surge Limiter

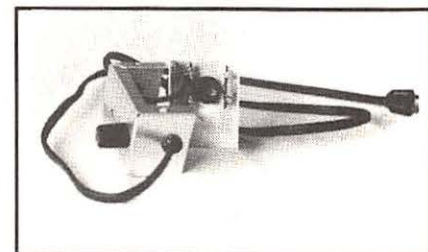
mistor used here has shown itself applicable with loads from about 40 to 120 watts, the range most vacuum tube vintage broadcast and ham receiver gear seems to fall into.

Construction is not critical as to the placement of parts, just as long as the thermistor itself has sufficient clearance from the inside walls of the project box and surrounding wiring. The thermistor gets rather warm, and should not touch any interior wiring insulation.

The fuse shown is a good idea for any vintage set, as most seem to lack them. This is a good way to protect your nice old set without having to modify it for fusing. You protect it two ways with this approach. This should be important for those with very old sets containing fragile, late '20s or early '30s power supplies, the blowing out of an in-line fuse can prevent considerable damage and the months-long search for replacement parts that can follow.

Yes, real radios do glow in the dark . . . just get that glow to come up a little slower.

(The author would like to thank Jack Simmons/KI6RF for his assistance in locating the desired component.)



The interior of the case, showing the thermistor mounted in the clear. When the case closes make sure nothing touches the thermistor disc: this thing gets warm!

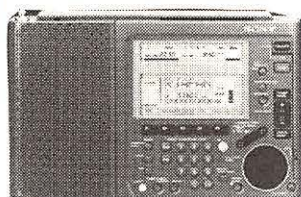


NATION'S LARGEST SWL DEALER

Minutes From
Washington D.C.

Coming Soon the *New* 1992 EEB Catalog!

SONY ICF SW77



From the genius of Sony, the world's most advanced portable Receiver. Factory programmed, 100 of the most popular SWL stations which you can reprogram yourself. ICF SW77 is a full featured hi-tech receiver with nothing left out.

- * .15-30 mHz/76-108mHz
- * 160 Memory Pre-set
- * AM-FM SSB
- * Wide-Narrow
- * Synchronous Detection

\$499.00 plus shipping

It's Time To Upgrade!

SONY ICF SW7600



This is our number one selling mid-sized portable.

- * .15-30/76-108 mHz
- * 10 Station Memory
- * Full SW Coverage .1-30mHz
- * Dual Conversion
- * AN61 Antenna Incl.
- * Clock, Timer, Alarm
- * AM/SSB/FM/FM Stereo
- * Direct Keyboard Entry
- * Power (4) AA Not Incl.
- * 7 1/4 x 4 3/4 x 1 1/4 wt. 22 oz.

\$219.95 plus shipping

#1 Compact Portable!

ICOM R1



We waited a long time for this one! It covers everything, BCB, SW, V/UHF, Cellular to 1300mHz.

- * .1-1300 mHz
- * 100 Program Memories
- * 11 Tuning steps .5 to 50 kHz
- * AM/FMN/FMW
- * Clock Timer 24hr Clock
- * Internal Nicad Included
- * Only 1.9 x 4.0 x 1.4, 8.5 oz.

\$539.00 plus shipping

Optional Accessories:
BC72 Desk Charger
CP12 12VDC cigg. cable
Ext. Nicad Pk. 110 to 1000 mah
BP90 batt. 6AA cell case
LC57,59,61 carrying case

World's Smallest Scanner!

FAIRMATE HP200



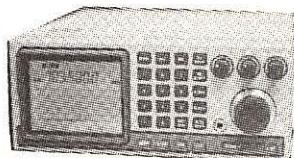
Now extra coverage! BCB and SW. Front end band pass filtering reduces inter-mod.

- * .5-650 and 800-1300 mHz
- * 1,000 Memories in 10 banks
- * Steps 5 to 995 kHz
- * 40 ch/sec search
- * Keypad and manual tuning
- * AM/FMN/FMW
- * Incl. 4 AA Nicads/AC charger/DC lighter cord/case/belt clip/earphone
- * 6.7 x 2.6 x 1.4 inches 10 oz.
- * 1 year warranty

\$449.95 plus shipping

Optional Desk Charger!

STANDARD AX700



Is it a Scanner or a Spectrum Display? It's both, now you can "see" those stations up and down the band that you missed. Add an M75 pre-amp to the AX700, and you have a SDU for your Icom R71A. You can see each SW band while listening.

- * 50 - 905 mHz coverage
- * 100 Memory .10 Banks
- * Steps 10, 12, 5, 20, 25 kHz
- * 1 & 5 manual steps
- * See up to 1 mHz Spectrum
- * Optional HF .1-50 mHz FC7300
- * 13.8V DC 700 mA

\$799.00 plus shipping

Optional:
FC7300 HF Converter, .1-50mHz IN,
100-150 mHz OUT. \$249.95

SDU Scanner

SHINWA SR 001



- * 25-999.995 mHz
- * 200 Channels Memories
- * Steps 5/10/12.5/20/25/50/100 kHz
- * Scanning speed up to 35 ch/sec.
- * AM/FMN/FMW modes
- * Frequency & Mode selected via front panel or remote control
- * Wireless infrared remote control Incl.
- * LCD provides multi-color display
- * Power 13.8V - 1.5A
- * 7 x 2 x 6 inch. 3 lbs.

Intro. Price \$499.00 plus shipping

Optional RS232 Interface
Optional 1R Remote

It's Here At Last!

AOR AR3000



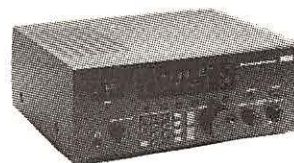
The Widest Coverage ever offered in one small package. Plus CW & SSB. A perfect mobile radio to cover everything.

- * 100 kHz - 2036 mHz
- * 400 Memories
- * Programmable tuning steps (50 Hz - 100 kHz)
- * Scan 20 ch/sec
- * AMCW/SSB/FMN/FMW
- * Uses 12 VDC or 120 VAC Incl.

\$989.00 plus shipping
Optional RS232, CSC3 \$299.00
Mobile mount optional \$14.90

Widest Coverage!

DRAKE R8



- * Freq. Range .1-30 mHz
- * 100 Program Memories
- * 5 filters .5, 1.8, 2.3, 4.0, 6.0 kHz
- * All Mode AM, CW, SSB, RTTY, FM
- * Pass Band Offset
- * Synchronous phase lock detection
- * 100dB Dynamic Range
- * Truly a High Quality Receiver

\$979.00 plus shipping

Optional VHF converter
and RS232 Software

Made In U.S.A.!



ELECTRONIC EQUIPMENT BANK
323 Mill Street N.E.
Vienna, VA. 22180

ORDERS: 800-368-3270
Local Tech: 703-938-3350
FAX: 703-938-6911

- * Sorry, no COD's
- * Free Catalog in U.S.
- * Battery's not included
- * Prices subject to change
- * Prices do not include freight
- * Returns subject to 15% restock fee

Virus Alert!

Is Your Computer Sick?

By Bob Kay



During the past 5 years, Personal Computers (PC's), have become valuable assets to radio enthusiasts. On today's market, there are computer programs for scanner buffs, shortwave listeners, and ham radio operators.

If you're currently using a PC in your listening post, there's a one in five chance that your PC may have a virus. At this writing, there are 250 known viruses. In 1990, 500,000 computer systems had been infected. Each month, approximately 2,000 computers are affected by a virus. The total cost to recover from virus attacks nationwide, is expected to exceed 10 billion dollars by 1995.

What is a Virus?

A virus is a computer program created to infect other programs. Computer viruses are designed by skilled programmers. These individuals will spend countless hours designing a program that will cause your computer to malfunction. After the program enters your PC, it begins to duplicate itself and cause internal problems; hence the name, "virus."

There are two parts to computer virus programs; a clone mechanism and an activation

mechanism. The clone mechanism allows the virus to attach itself to other programs. The activation mechanism causes the damage. It may display a harmless message on your screen, or it could wipe out all the data on your disk or hard drive.

A virus can be activated by a wide variety of situations. The programmer of a virus may select a commonly misspelled word. When the computer operator types the misspelling, the virus activates. Other viruses can be activated by the internal clock of the computer.

Virus Types

Although no two viruses are exactly alike, there are certain key elements that allow most viruses to be categorized into the following four groups:

1.) **TROJAN HORSES:** Designed as innocent programs, these are often found in pirated computer games. When you press the "load" key, the virus begins its destructive work.

2.) **TIME BOMBS:** Activated by the arrival of a specific date, a specific amount of elapsed time,

or the entering of a particular word or phrase, a Time Bomb can remain dormant in your PC for years. The most popular Time Bomb is referred to as the "Friday the 13th" virus. This virus attacks when your computer indicates that the 13th is a Friday.

3.) **WORMS:** The worm virus is designed to spread and multiply throughout your system. Generally, the intent is not to destroy data, but to slow the computer's response time. Other worm viruses actually remove, or put "holes" in your data—just like a worm.

4.) **DATA NIBBLERS:** These programs are designed to change a very small portion of your data. Data Nibblers are the most serious threat to the computer industry. Generally, the PC operator doesn't realize that the data is being changed or deleted. In some cases, the operator may actually discover a few altered numbers, but he or she will usually contribute it to personal error.

Data Nibblers are often found in spread sheets, where a large amount of numbers and data are used. By the time the damage is discovered, it's usually too late.

Catching a Virus

Virtually any disk that contains a program may also contain a virus. Electronic Bulletin Boards (BB's) are 30,000 strong, and are the easiest way for your computer to catch a virus. When you download from a BBS, you run the risk of inviting a virus into your computer.

Scanning the contents of the downloaded programs is of little help. Viruses are skillfully hidden within programs, and they are rarely detected during a "visual" scan.

Preventive Measures

The least expensive counter measure is to make backup copies of your system. The backup tapes won't stop the virus, but at least you'll be able to restore the data that was lost. Restored data is not immune. If the virus hasn't been identified, the backup data will be continually lost.

The possibility of back up copies containing a virus is another consideration that can't be overlooked. Many viruses will automatically write themselves to an inserted disk. To prevent this, "write protect" (cover the notched edge) your original program disks.

Use only legitimate copies of software from suppliers. It's an expensive counter-measure, and it's not entirely foolproof. There have been a few cases where legitimate copies of software have contained viruses. However, software houses are fully aware of the problem and the chances of catching a virus in this manner have been greatly reduced.



Buy a good, anti-virus testing program. There are quite a few on the market. Prices vary, and so does the effectiveness. Visit your local book store and check out several computer magazines for their reviews and recommendations. However, don't simply buy a virus protection program and think that you're totally protected. Computer programmers are constantly developing new strains that defy detection. To maintain a degree of immunity, be sure to update your anti-virus software on a regular basis.

Diagnosing Your PC

As we all know, computer malfunctions are common. And it would be foolish to blame every problem on a virus. But, there are certain problems that can be directly linked to viruses: (1) Is the system running unusually slow? (2) Was the hard drive info wiped out? (3) Is the disk light flashing at odd times? (4) Are small segments of information missing from your files? (5) Are programs changing in size for no apparent reason? If so, your computer may have a virus.

After a virus is discovered, be sure to notify other PC owners who have shared your software. And don't forget that some viruses will automatically write themselves to unprotected disks. If you loaned out a software program that wasn't write protected, it could be returned with a virus attached.

Killing the Bug

If you think that your computer has a virus, turn the power off. This will prevent the virus from spreading, but it won't kill it. To kill the bug, you'll need a good virus detection program. Modem users can contact the National Computer Security Association, (NCSA) at (202) 364-1304. Another helpful source is the National Institute for Standards and Technology, (NIST) which provides virus alerts and information, (301) 948-5717.

Prevention

All computer problems can not be attributed to a virus. But if your system requires troubleshooting, the possibility of a virus must be considered. Since there are no clear cut procedures to follow, the best deterrent is to remain alert, and to use a good quality detection program on a regular basis.



Control

AOR AR3000

**JRC NRD-525 ⓂJ
NRD-535**

Kenwood ⓂK

SHORTWAVE NAVIGATOR

Puts this Macintosh menu on your screen and gives you control of all of these for \$69!

plus
scan or click to tune
custom program search
reports
memory tracking
frequency finder

(Copilot/Autopilot for Kenwood—add \$30)

Custom 6 ft. Cables

Mac to Kenwood/AR (mini-8 to DB-25)—\$20
Mac to NRD-525 (mini-8 to JRC 12-pin)—\$35

Prepaid mail orders in US funds only
Not available in retail stores
Add \$10 for orders outside North America
Write for details!

DX Computing

232 Squaw Creek Rd.
Willow Park, TX 76087
(817) 441-9188

WEFAX To The Max



PC GOES/WEFAX 3.0 \$250

PC GOES/WEFAX 3.0 is a professional fax reception system for the IBM PC. It includes an AM/FM demodulator, software, cassette tutorial and 325 page manual. Check this partial list of our advanced features:

Res. up to 1280x800x256	APT Lat/Lon. Grids
Unattended Operation	Orbital Prediction
Colorization	Frame Looping
Zoom, Pan, Rotation	PCX & GIF Export
Contrast Control	Grayscale Printing
Tuning Oscilloscope	Infrared Analysis
Photometry/Histograms	Variable IOC & LPM

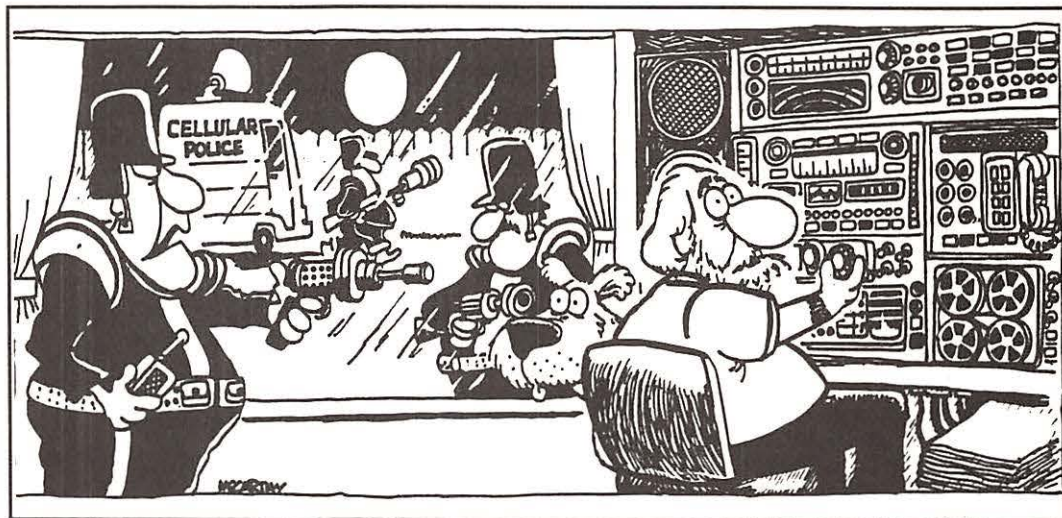
PC HF FACSIMILE 5.0 \$99

PC HF Facsimile 5.0 is a complete shortwave FSK fax system for the IBM PC. It includes an FSK demodulator, software, 250 page manual and tutorial cassette. Call or write for a complete catalog of products.

Software Systems Consulting
615 S. El Camino Real, San Clemente, CA 92672
Tel:(714)498-5784 Fax:(714)498-0568

Sex, Lies and Audio Tape

by Steve Douglass



The plot was worthy of a soap opera. It began on a hot day in August. The cicadas were singing loudly in the trees. The yellow grass on the golf course bore stark testimony to the harsh West Texas climate. The powerful Texas congressman picked up his cellular phone and punched in a number. Soon he was talking to the attractive woman he had met at a local watering hole. Would she accompany him to Cancun, Mexico, for the weekend? A little sun, fun and feminine company was just what the congressman needed.

Although this member of the House of Representatives was able to convince the entire congress to vote on a bill, he was having trouble with the gal on the phone. Little did the politician know that attempts at getting a date were being recorded and that tape would be in the hands of the local media.

This is how our soap begins, but as with any good soap opera there are many plot twists, political pressures, cloaks and daggers and in this one, even fake FBI agents. Ours is a continuing saga and the plot has never been resolved.

I learned about the illegal cellular phone intercept and taping from a friend at a local TV station. From him and others I would hear the same question over and over again. "C'mon, you can tell me. It was you wasn't it? You made that tape, right?"

Unfortunately, I had developed a reputation. Running a news tip service for the local and national media called "The Reporter's Edge" had thrust me into the limelight from time to time. I

had recently appeared on a local newscast concerning my monitoring of Desert Storm communications, and my stand on the Electronic Communications Privacy Act was well known, so I became a prime suspect. I knew it was probably just a matter of time before I had a visit from the FBI.

Soon I became aware that I was under some kind of surveillance. When I talked on the phone strange echos and clicks could be heard on the line -- a sign of a bad phone tap? -- and my mail was coming to the house opened.

Then my 90 pound Old English sheepdog disappeared. Because he was quite the fence jumper, whenever I left home I padlocked him on an unbreakable car towing chain in the backyard. When I came home from a trip to the store, he was gone. For weeks I searched the neighborhood. There was no sign of the dog at the animal shelter (alive or dead) and even the chain and lock had vanished.

All that was left as evidence was a sawed through link from the chain. Why would someone take my dog? Without him guarding the backyard it did make it easier for anyone to approach the house. It was like something out of a bad spy novel. My wife thought I was being paranoid until other things led her to believe I was indeed being watched.

Strange delivery vans were soon parked down the street from my home. Men could be seen in the vans watching the house with binoculars. When I approached, they would drive off. I decided they were either FBI agents watching me or burglars casing the house. I would find out later they were neither.

I was walking in the mall when two men approached. They looked like farmers. One was wearing a down-filled vest, plaid shirt and baseball cap. The other wore a brown leather bomber jacket, black jeans and boots. They looked like rejects from the movie "Deliverance." A badge was flashed in my face. "Mr. Douglass, I am special agent Todd and this is special agent Fletcher. We are with the FBI and are investigating the Linus Baker case. "Could we ask you a few questions?"

"Sure," I replied being a little naive and having nothing to hide. "Am I under arrest?" I asked hesitantly.

"No," agent Todd said, "we just need to ask you a few questions about the case."

Even though I was expecting contact, their appearance still took me by surprise. All they had to do was knock on my door. Why follow me to the mall? I didn't expect to be questioned in the middle of a shopping mall, but I was glad for the opportunity to clear my name. I welcomed their questions. This is how the questioning began,

"Dragnet" style.

Question: "What do you know about the Linus Baker case?"

Answer: "Just what I have read and heard in the local media."

Question: "Do you know Linus Baker?"

Answer: "Never heard of him until all this came about."

Question: "Did you tape Representative Bill Sarpalius' cellular phone conversation?"

Answer: (making sure I looked the agent dead in the eye) "No, not only is that illegal, it's incredibly stupid."

I talked to the two for 30 minutes. Most of the questions were about how one would go about taping a cellular phone conversation, the equipment used, etc. They seemed surprised how easy it was to monitor. I told them it was no big deal and anyone could pick up a receiver just across the mall from where we were sitting. I even told them that cellular phone calls could be overheard on any TV set. It seemed strange they were so ignorant of the subject.

Agent Todd jotted all this down on a pad and said they would contact me later if they needed to talk to me again. They left me in the mall.

A few weeks later, my friend from the local TV station called to tell me that the FBI had come by to question them about the source of the tapes circulated to the media. One of the reporters involved asked if Steve Douglass was a suspect. The answer surprised both them and me. "Steve who?" the agent replied. "Who is this Steve Douglass?" They then proceeded to ask all the media involved about who I was and why was I considered the authority on the subject.

When my friend told me about what happened, the little hair I had on my head stood on end. Either the feds were playing dumb or they really had never heard of me. If the feds really didn't know who I was, then this brought up a scary question. If the farmer-looking feds at the mall weren't real, then who were they?

It was only a short while before I had a visit from a real FBI agent. I checked the badge carefully this time and also noted the car parked in my driveway had federal plates. He identified himself as agent Scott Hendricks.

This guy looked like a fed. He wore a blue pin-striped suit that looked as if it was pressed on him. Under his jacket was the unmistakable bulge of a weapon in a holster. He looked like he had arrived from a Hollywood casting department. Kevin Costner could play him in the movie. A bonafide, tough-looking, gun-toting, badge-flashing FBI agent.

Plus, this guy had something that established without a doubt he was the real thing, a subpoena. But before I was in possession of that piece of paper, he had a few questions to ask me about the

A Soap Opera Digest

Joe Clements stood before a federal magistrate in Amarillo, Texas, and pleaded guilty to charges of illegally recording a cellular telephone conversation between the city's congressman, U.S. Rep. Bill Sarpalius, and a young woman. The 75-year-old businessman appeared nervous, edgy and out-of-place in court. Clements was law-abiding and respected in the community, and would never have monitored or taped the conversation he heard coming over his radio scanner had he known it was illegal.

Like so many listeners, Clements had believed that if voices came across the airwaves, they belonged to the public.

But late last August, Clements listened to the wrong conversation at the wrong time and gave a recording of it to the wrong people. The tapes were distributed to the news media last October in the midst of a mean-spirited re-election battle between the Democrat and his Republican challenger, Dick Waterfield.

To date, two men -- Clements and student journalist Linus Baker -- have been prosecuted in connection with the tape case. Because of the circumstances of the case, it did not comprise a valid test of the Electronics Communications Act of 1986 which makes monitoring of cellular phone conversations illegal.

*Excerpted from an article by
Stephanie Scott*



Representative Bill Sarpalius

THE FIRST ONE IS FREE!

Your first issue of the SWL Swapper is free for the asking. It's the only classified paper for SWL & Scanner enthusiasts. Buy, sell or swap receivers, scanners, freqs, HAM gear, computers and more. Helpful hints, tips and articles in every issue. For your free sample issue call us at 800-745-8951 (24-hr toll free) or write:

Brendale's/SWLS
P.O. Box 1135
Pepperell, MA 01463-1135

The Radio Collection

1992 PASSPORT
TO WORLD BAND RADIO

** \$14.95 **

RADIO T-SHIRTS

** \$15.95 **

"Once Upon A Golden Time"

(Tube Radio & Flared Horn Speaker - Gold on black shirt)

"SWLs Do It With Frequency"

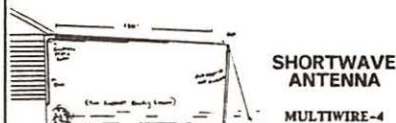
(Globe and Antenna - brightly colored shirt)

** \$2.00 Bonus Certificate with Every Order **

US Orders: Postpaid, add \$2.00 for Priority Mail.
NY Residents add Sales Tax. Shirts are One Size Fits All.

PO Box 149, Briarcliff Manor, NY 10510
Where Radio Is Fun Again!

BOOST RECEPTION



SHORTWAVE
ANTENNA

MULTITREE-4

This antenna brings in signals as only a large antenna can. 150' long and with four wire elements to optimize reception on all SWL bands. 63-500kHz. With 50' coax feedline, 100' rope and a Static Bleed. Regularly \$100, INTRO PRICE \$90

APARTMENT
DWELLERS' DREAM!



Hear signals from every corner of the globe!
Weak DX stations come in strong!
Big performance and compact size!

Works like a large antenna and "peaked" for optimum short-wave reception. COVERS ALL SHORT-WAVE BANDS (0.3-30 MHz). Strong signals with internal 16-22 db amp. Low noise and built-in low pass interference filter. Works with 5 to 20 ft "low profile" antennas wire (supplied). 115VAC powered. Cable to receiver NOW INCLUDED (specify connector). ANTENNA PLUS-2 \$90 Scanner and Wide-Band models also available. Call/send for details!

SCANNER STICK

Great Scanner
Reception!

Covers all scanner
bands 25-1200MHz.
Only 35" long but picks
up signals like a vacuum!
Ruggedly housed inside a
PVC tube it withstands
weather that would tear
other antennas apart! 35"
coax included with either
BNC or Motorola conn. Connects scanner to recorder.
For most up to 1.5" dia. 115VAC or 9V batt versions
ONLY: \$40

NEW SUPER SCANNER
STICK: Amplified version
with 16-22db gain!
ONLY \$60



Listen to entire nights
scanning in minutes!
Record only the "ACTION".
BNC or Motorola conn. Connects scanner to recorder.
TAPE SAVER TS-1 \$60!

Continuum US shipping/handling \$6
AK, HI, PR, Canada shipping/handling \$8
NY and MI residents add local sales tax

MANY MORE PRODUCTS!
SEND FOR DETAILS!



ELECTRON PROCESSING, INC.
BOX 68 -MT
CEDAR, MI 49621

(616) 228-7020

Baker case, again "Dragnet" style.

Question: "What do you know about the Linus Baker case?"

Answer: "Just what I have read and heard in the local media."

Question: "Do you know Linus Baker?"

Answer: "Never heard of him until all this came about."

Question: "Did you tape Representative Bill Sarpalius' cellular phone conversation?"

Answer: (making sure I looked the agent dead in the eye) "No, not only is it illegal, it's incredibly stupid."

Talk about your *deja vu*.

"Before we go on, I have a few question I need to ask," I said hoping I wasn't out of line. "I have answered all these questions before."

"What do you mean?" agent Hendricks asked, raising an eyebrow.

I then proceeded to tell him about my close encounter with the farmer feds in the mall.

He jotted all this down and nodded like an FBI agent should. I thought to myself, "This is a real FBI agent, schooled in all types of criminal investigation techniques, backed by the most sophisticated police organization in the world. The same police agency which captured Bonnie and Clyde and Al Capone. Surely he would know who those guys were."

His answer was direct and to the point. "I have no idea who they might be. They weren't FBI agents. I am the only agent assigned to the case."

So much for Hoover's legacy. In all fairness, he did theorize that it could have been a private detective working for one of the parties involved.

(I add this knowing this article will probably end up in my FBI file.) I can see the evaluation by the case worker now: "Steve Douglass, radio monitor, known trouble maker and enjoys making fun of federal agents."

For the next 30 minutes he asked me many questions about how the monitoring could have been done. Was it difficult? Do you think it was politically motivated? As with the fake feds, I was surprised at how little he seemed to know about cellular communications. It was no big deal, I told him. Just buy a scanner and listen in. He acted like it was some big complicated technological miracle. Either he was playing ignorant or he actually was.

The agent also asked me about "*Monitoring Times*." Who did I know in Amarillo who subscribed and was there any word on the grapevine to who could be the culprit? I got the general impression they think some secret monitor's society exists trading secret information like George Bush's hat size. I assured him there was no grapevine. After all, they should know. I hear the federal government subscribes to "*Monitoring Times*."

Agent Hendricks then served me the subpoena. He assured me I was probably not the man they were looking for. "You may not be needed to testify," he said. "Call this number Monday and they will tell you if you're needed. Thank you for your cooperation, Mr. Douglass. We could probably use you as an expert witness." He then shook my hand and left. Just what I wanted -- to testify and put some poor guy in jail for listening to a radio.

About an hour after he left, my friend from the TV station came over. Grabbing me by the collar, he whispered in my ear, "We gotta talk." We got in his car and took off.

He was driving like a bat out of hell, and he kept looking in his rear view mirror. "Okay, what's so important you had to drag me away from 'Wheel of Fortune'?" I asked.

"Nothing much. You are just probably being bugged and watched, that's all," he said. "I just spent an hour with the FBI and all they could talk about was you."

He explained he got a call from agent Hendricks and asked if he would meet him at the local Pizza Hut. How do you turn down an invitation from an FBI agent? According to my friend, I was the main topic of conversation.

But what concerned him the most was that they wanted to talk to him. "How did they even know I knew you, unless they were watching the house?" he asked. "They must have jotted down my plate number and ran a make on it." I wondered if the feds have started a file on my friend.

I told him about my visit from the FBI and we compared notes. He was pumped for the same information I was. He was also asked if he thought I was the source of the Linus Baker tape. My friend said, "No way. Steve isn't that stupid. He knows the laws on monitoring better than anyone. The last thing he would do is jeopardize his livelihood by doing something as stupid as taping a cellular phone call and distributing it to the media."

Needless to say, I was a bit spooked. Until then I wasn't sure if I was really being watched or just being paranoid, but now I was sure. I just wondered how many different parties were watching me? How many real feds and how many fake feds. Kind of ironic, right? Eavesdropping to find an eavesdropper.

I swept the house for radio transmitting bugs with my frequency counter. I even made sure I had all the fed frequencies punched in my scanner so I could eavesdrop on the eavesdroppers. Nothing. Nevertheless, I was careful about what I said on the phone, or in the house, for that matter. I was completely innocent of the charges, yet I felt paranoid. My 13-year-old daughter, Jennifer, thought it was totally cool. My wife Teresa didn't.

A couple of days later I called the number to see if I was needed to testify. The number belonged to the office of the assistant U.S. attorney, Vicki Howard, the prosecutor on the case. "We need to schedule an interview with you, Mr. Douglass," she said.

"Not another interview," I thought. I was about interviewed out. Since the case had come to light, I had been interviewed by the local newspaper, a local TV station, two out-of-town newspapers, one national publication, two fake FBI agents, one real FBI agent, and now the assistant U.S. attorney. Cellular this, cellular that. I wished I never had heard the word.

I went down to the federal building the next day. As I sat in the parking lot, a strange temptation gripped me. Seeing all those antennas



sprouting from the roof was more than I could take. The devil in me took over and I set my Pro 2004 scanner on search mode. The new search and store module I had recently installed inside would do the rest.

When I came out, the scanner had bagged a nice catch of busy federal frequencies. Sorry, Uncle Sam, I couldn't help myself. Turnabout is fair play, right?

My interview with Vickie Howard started like this.

Question: "What do you know about the Linus Baker case?"

Answer: "Just what I have read and heard in the local media."

Question: "Do you know Linus Baker?"

Answer: "Never heard of him until all this came about."

Question: "Did you tape Representative Bill Sarpalius' cellular phone conversation?"

Answer: (making sure I looked the U.S. assistant attorney dead in the eye) "No, not only is that illegal, it's incredibly stupid."

I hate reruns.

Yes, hard to believe. More of the same. They still weren't convinced I wasn't their culprit. We talked for 30 minutes about (yes, you guessed it) cellular phone monitoring. She asked me if I knew who might have made the tape. "Have you heard anything on the monitor's grapevine? Anyone bragging about it?" she inquired. What is this monitor's grapevine they all seem to think exists?

Yes, we all get together on the third Tuesday of each month dressed in black trenchcoats huddling over exotic KGB radio gear, following politicians around, peeking in windows, etc. "I have no idea who it could have been," I replied. I told her that anyone with an 800 MHz band scanner or a TV could have done it. "You probably have about 130,000 suspects in the Amarillo area alone," I said.

"What about this *Monitoring Times*? Do you know who in the area might subscribe to it and would they most likely be the one who could do the taping?" she asked.

They were grasping at straws, desperate to find out who did the taping. "I only write for the magazine," I explained. "I don't distribute it, mail it out or anything. I don't think you could say someone was a suspect just because they read *Monitoring Times*. That's like thinking everybody that read a Hitchcock thriller was a murderer."

I surmised the political pressure on the feds to find the culprit must have been enormous. Do

you think if someone had taped the local real estate salesman's cellular call it would have been pursued like this? They wanted a head on a platter. I was afraid the head they wanted was mine.

The rest is history. As it turned out, I didn't have to testify. Baker named his source (Brad Ferguson) and was found guilty on two counts of unlawful disclosure of the contents of an intercepted telephone conversation. Baker was fined \$250.

The tape was eventually revealed to have been made by Joseph Edgar Clements who pleaded

guilty on March 26 and was fined \$250 and a \$5 mandatory fee for intentionally intercepting a wire or electronic telephone conversation.

Meanwhile my family and I are just coming to the realization that we don't have to talk in hushed tones or look over our shoulders anymore. My mail is arriving sealed again and the phone sounds crystal clear. We all miss our dog. It makes us stop and think. All this trouble because a congressman wanted a date.



RADIO C. CRANE CO.

1-800-522-TUNE (8863) Orders

Canada only 1-800-521-TUNE

WATSON LANE, FORTUNA, CA 95540

(707) 725-5940



SELECT-A-TENNA - Doubles the normal listening range of any AM(BCB) station!

AUTO ANTENNA - Easily installed, almost doubles AM reception, no FM degrade.

SANGEAN - The ATS-803A is rated the best shortwave radio for the money.

GRUNDIG Satellit 500 - The most selective portable.

McKAY DYMEK - World's best active SW antenna, US made - \$208.99

UNIDEN SCANNERS - Decent price plus custom guaranteed modifications.

AMPLIFIED SPEAKERS(2) - Transforms any earphone jack to high quality sound. Great for FM stereo!

KOSS HEADPHONES - Simply the best, lifetime guarantee (\$5 each repair).

CHANNEL MASTER FM ANTENNA - Most powerful FM antenna 12'6" L x 6' W.

SHORTWAVE ANTENNA PAMPHLET - 6 plans for the "non-rocket scientist" \$3.00.

- Please write for free catalog. Our prices are the lowest in the nation when you consider our high level of service.

- All prices include shipping and handling - 30 day satisfaction all products.

- Information, experience, and service to help you decide which are best.

Barker Williamson/Eavesdropper/Proton/Books/Custom Adaptors & Cable

Coast Guard Radio

A Guide to Using and Monitoring US Coast Guard Communications
by James T. Pogue.

Full listings of all US Coast Guard vessels, aircraft and installations. Frequencies, call signs, addresses, weather and Notice to Mariners broadcasts, Loran, history, organization, much more.
\$12.95 + \$2 s/h (\$3 foreign)

The Warship Directory

Vol 1 - US, Canada, Great Britain.

US Navy, Military & Sealift Command, Coast Guard, Army, NOAA, research vessels, Canadian Navy & British Navy. Plus radio call signs and frequencies.

\$14.95 + \$2 s/h (\$3 foreign)

The Scanner Listener's Handbook

How to Hear More on Your Scanner Radio

Explore 25 - 2000 MHz. Band allocations, users, scanners, antennas, accessories, listening laws, equipment, information sources, more.

\$14.95 + \$2 s/h (\$3 foreign)

Order now from your radio book dealer or

Tiare Publications

PO Box 493M, Lake Geneva WI 53147

Catalog \$1. free with order. Visa/MasterCard

Shortwave Broadcasting

Glenn Hauser

Box 1684 - MT

Enid, OK 73702

ANGOLA R. Nacional, Benguela, 6152.35 at 2305 UTC, poor to fair (Finn Krone, Denmark, *Play-DX*)

ARGENTINA Radio Belgrano has been turned over to new owners, and renamed Voces en Libertad; has a sesqui-decade license. For the moment, will continue on shortwave 11781 kHz daily between about 1400 and 2000 (Gabriel Ivan Barrera, Argentina, Onda Corta) Radio Libertad Belgrano on 11781.1 from 1800 to closing at 2000 (Julian Anderson, *ibid.*, *Play-DX*)

BOLIVIA 4409.3, Radio Eco is named for owner Carlos Espinoza Cortez, he says in a QSL, changed when Radio Reyes permit ran out (Dave Valko, PA, *Fine Tuning*)

4596, Emisora Villamontes, 0930 in Quechua and Spanish about cholera in Peru (Daniel Camporini, Argentina, *Pampas DXing*)

4902, Radio San Ignacio, a hard to log station, with regional talks, ID, 1105 to fade out at sunrise 1118 (Julian Anderson, Argentina, *Pampas DXing*)

5004.7, station heard here announces as Radio Libertad; Radio Cristal sold its AM & SW, and is now only on FM, per Juan Antonio Morales in La Paz (Henrik Klemetz, Sweden via Dario Monferini, Italy, *World of Radio*)

6015.7, Radio El Mundo, better on USB, 2215-2230 several days (Giuseppe Zella, Italy, and Finn Krone, Denmark, *Play-DX*)

BULGARIA Radio Sofia World Service revamped its English schedule into blocks all multiples of 45 minutes: 0300-0515 on 11720, 15160, 17825. 1730-1900 on 11660, 11720, 11765, 15330, 17780, 17825. 1945-2030 on 11765, 17780, 17825. 2145-2400 on 11660, 11710, 15110, 15330, 17825 (Bill Westenhaver, PQ, *W.O.R.*)

RADIO SOFIA



Ministry of Information notified Radio Moscow to pay in western currency, not Soviet, for relays of RM, Minsk, Yerevan, Vilnius and Kiev using two 500 kW near Plovdiv. Otherwise, Bulgaria will rent to RFI, DW, BBC! (Rumen Pankov, Bulgaria, *DSWCI SW News*)

CHINA Radio Beijing via Mali at 0000 on new 15285 ex-15100, parallel to 17705. (non) Voice of Democracy returned June 3-4 for Tiananmen Square anniversary, but only heard twice, at 1200 and 1500 on 8057 (Yamashita, Kondo & Hidetsugu, ABI, Radio Japan)

Voice of China, 15280, readable when hamming was weaker than usual, 2100-2200; says it is operated by students and scholars of China abroad (Toru Yamashita, *ibid.*)

COLOMBIA 5555v, La Voz del Valle, Sibundoy, Putumayo, formerly announced as 5550, reactivated announcing 1.6 kW; heard a few times in the morning, 1145-1202, and evening (Yimber H. Gaviria, Colombia, *Play-DX* and *Pampas DXing*)

Radio Nacional has an English program on Saturdays, Colombian Culture Magazine, at 2100-2115, on 9635, 11825, 15335, 17865 (Gaviria, *Play-DX*) Seldom active on all at once, and vary widely, such as 11821, 17900.

COMORO ISLANDS Reactivated on 3330.0 with apparent new transmitter, overriding Rwanda on 3330.4, heard from 0300 until 2100 (Vashek Kovinek, RSA, via Monferini, *W.O.R.*)

COSTA RICA Radio for Peace International has standardized its schedule to the same repeat pattern seven days a week, 6 and 12 hours

after the first afternoon broadcast in the 1800-2400 UTC period. So *World of Radio* is heard: Sun. 2230, Mon. 0430, 1030, Tue. 2030, Wed. 0230, 0830, Fri. 2100, Sat. 0300, 0900, 1930, Sun. 0130, 1730 — on 15030 and 13630 most of the time, 21465 USB switching on 7375 USB around 0030 or 0100. *Undercurrents*, critiques of US media, airs weekdays at 1945, 2145; Saturdays 2345. *Radio New York International*, Sat. 2130-2330, repeated Sun. at 0300, 0930. New addition is *Outlaws for Peace*, with Willie Nelson and friends, weekdays at 1900-1930 plus repeats.

CUBA 11760 replaces 11835 at 0600-0800 and not 17760 as previously reported.

ECUADOR Radio Rio Amazonas, 4870, is believed to have closed down; no longer heard after many years of activity. A mission pilot in Shell says it's a victim of improved jungle communications, drying up the market for its *avisos* (paid messages) (Rich McVicar, HCJB *DX Partyline*)

Topics on HCJB's *Ham Radio Today*, Wednesdays: Aug. 7, 11-year solar cycle, discone antenna, anatomy of a ham contact. Aug. 14, multiple solar cycles, inverted Vee antenna, direct conversion receivers. Aug. 21, frequency and wavelength, delta loop antenna, hamfest survival. Aug. 28, polarization, windom antenna, trees as antenna supports (HCJB)

EL SALVADOR Clandestine, Radio Venceremos has returned to SW "for a trial period," in addition to FM; on 6400 at 0000 and 0200 (BBC Monitoring) Definitely IDed once on 6754.6 instead, not the Peruvian (Dario Monferini & 13 at DSWCI DX Camp, Denmark, *DX Listening Digest*)

EQUATORIAL GUINEA Radio Africa Dos Mil on new 6907.00, at 2000-2130 (*ibid.*)

GUYANA GBC active on 5950.29, in English, ads at 0938 mentioned Georgetown (Chuck Bolland, FL, *DXLD*) 5950.2, ID as Voice of Guyana at 0841, Indian music at 0850, ads at 0855, news at 0900 but off abruptly at 0901; first time heard in years, but heavy WYFR interference until 0900 (Paul Routenburg, Ont., *Fine Tuning*)

HAITI 4VEH is silent on 4930, waiting for parts, maybe back in November; getting its own small generator by fall to keep MW & SW going (Mardy Picazo, 4VEH, TWR *Bonaire Wavelengths*)

HUNGARY As of July 1, Radio Budapest dropped several languages, and re-scheduled English to 2100-2200 to Europe, 0200-0300 North America, both on 6110, 9835, 11910 only. The DX program will continue but as part of these hours (Edwin Southwell, England, *DXLD*) Radio France International hoped to rent new spare transmitter time in Hungary for African service, lacking the capacity for this in France itself (Radio Netherlands *Media Network*)

ICELAND Formerly only in Icelandic, Ríkisutvarpid heard with English news at 0730 on 9265; or you can get it any time by phoning 354+1-693690 (Simon in Wales, *RNMN*)

IRAN (non) Voice of the Mojahed, obviously via Iraqi transmitters, heard 0130-0300 on 4600, which lagged behind 7155, 6150, 4750, 3556.6 by about five minutes (BBCM)



Shortwave Broadcasting

IRAQ Baghdad's Kurdish program moved from 4600 to 6540, at 1530. Arabic program on 3980, 4600, 7350, 17960 (BBCM)

(non) the 7097 station last month was Voice of *Rebellious Iraq*

KURDISTAN Voice of Iraqi Kurdistan is one of the world's most listened-to, yet cheapest to operate, shortwave stations. Studio is in a truck in northeast Iraq, camouflaged, with five technicians, 20 announcers, and 20 guards, surrounded by anti-aircraft artillery; at least 10 million of the 25 megaKurds listen daily; in another truck it has its own monitoring service of BBC and VOA 24 hours on a large SW receiver. News is written by hand on pages which have been known to blow away during the newscast. U.S. bombed jammers, so frequencies can stay put, 3900 at 1700-1930, 7085 at 0600-0630 (RN *Radio-Enlace*)

MALAYSIA Kuala Lumpur, 5965, no longer 24 hours, but opens at 2100 in Malay, audible until around 2230. Kota Kinabalu, Sabah, on 5980 made rare morning appearance, 2100-2130 with Islamic religious feature, parallel 4970 also heard, dominant over Brazil and China co-channel on the solstice (Bob Padula, Victoria, Australia)

MONGOLIA Latest Radio Ulan Bator English schedule, confirmed by monitoring: 0910-0940 on 11851, 12015. 1200-1230 same except Tue & Fri. 1445-1515 on 7261, 13780. 1940-2010 on 11791, 11850 (Yoshinori Kato, Radio Japan DX Corner)

MOZAMBIQUE Radio Maputo on new 4863.4, ex-5111, at 0400; Radio Mozambique, Pemba on 4894.5 at 0330 (Vashek Kovinec, RSA, via Dario Monferini, *World of Radio*)

NEW ZEALAND RNZI has seven new QSL designs; 15120 will replace 13785 from September at 1800 (Tony King, RNZI Mailbox) *The Rudi Hill Show* has been appearing on the first UTC Fridays of the month at 0430-0500 on 17770; *Calling Pitcairn and Norfolk* on the 2nd and 4th; *Tokelau* on the 3rd.

NICARAGUA RICA, 4900v, which has sent unsolicited T-shirts to DX reception reporters, now asks them for donations to help install a 10-kilowatt transmitter already on hand to replace the one-kW unit. Needs \$16,000 for this project; write Digna Bendanya, Directora, Radio Informaciones de Centro America, Apartado Postal 38, Sucursal 14 de Septiembre, Managua; phone or fax 70-225 (via Tom Johnson, IL, *DXLD*)

NIGERIA Radio Nigeria, Kaduna, reactivated 9570 (BBCM) Heard from 0430 with English news at 0500, seems LSB (Ernie Behr, Ont., *DXLD*) Super-strong, obviously using 250 kW here, but fade out by 0600 (Bob Padula, Vic., *ibid.*)

OMAN Senior Engineer at BBC Masirah says address in WRTH should be corrected to: P.O. Box 6898, Ruwi, Sultanate of Oman. Full-data QSL letter for reports addressed to transmitter engineer (Andy Sennitt, WRTH, *RNMN*)

PERU A fiesta of hot, new information thanks to Dario Monferini who frequently phones DXers in Lima. After several years in Switzerland, Juan Carlos Codina is back with an NRD-535 receiver:

3810.6-3809.3 variable, R. Centenario, Cerro de Pasco, 0100-0400 s/off, claims to be on 3805, 65 meters; address is Jiron 1, No. 122.

3841.84, Radio Moderna, Cajamarca, strong 0100-0500 but is 24 hours, third harmonic of 1280.6.

4182.6-4182.8v, Radio Memprillar (memprillo is a tropical fruit), near Contumaza, but town not clear due to bad quality of microphone audio — Jascas, Gaschas, or Cascas?, heard 0000-0400v s/off, announcing 1190 and 4150, slogan "desde la sierra primaveral"

4321.04, Radio Tuman, very strong third harmonic from Tuman, La Libertad, 2300-0100.

4410.38, Ondas del Peru, harmonic of 1470+ but announced 1460, 2100-2406 s/off.

4510.7-4517.5v, Radio Uno, Huanuco, 2300-0200 s/off, uses mysterious abbreviation, "C.S.S."

4751.86, Radio Huanta Dos Mil, again active, 0100 in late June.

5131.46, Radio Vision, Juanjui, active at 0100-0130

5419.15, Radio Sonorama, Saposoa, Huallaga, San Martin, s/on at 2300.

5835.25, Radio Jinijani, Ayaviri, 2100-0300 s/off, slogan "la primera en el corazon del pueblo."

6229.25, could be harmonic or mixing product, slogan "la emisora de la juventud," could be Radio La Hora, Cusco; seems in Arequipa area, 2330-0058 when closed abruptly, perhaps transmitter problem.

6261.02, Radio Juanjui, Mariscal Caceres, San Martin, active around 2300-2400.

6280.95, Radio Huancabamba, active 2330-0230 with special live program for 7th anniversary; usually closed around 0200.

6781.74, Radio Tigre, Porochocho (a little town in Cajamarca province), 0000-0430 s/off, to return at 1100; its official opening was June 16.

7028.33, Radio Azangaro, in town and province of same name, Puno Dept., on the solstice celebrated 166th anniversary of town, first anniversary of station, 0300 past 0500 with live program, announced s/on is 1400.

Pedro F. Arrunategui's monitoring, some of it involving the same stations:

3500.5, Radio Chillia, in Chillia, Patate, La Libertad, announced schedule 2300-0200 as station was being dedicated; address is Jiron Miraflores y San Cristobal Esquina; slogan "al margen derecho del Rio Marañon." Formerly on frequency were Radio Trujillo, and a Colombian.

3841.2, Radio Moderna, Cajamarca, at 1034-1115.

4140.8, Radio Gran Pajaten, Celendin, Cajamarca, 0150-0315, gives 3810 kHz. Gran Pajaten is a group of Machu-Picchu-type ruins in Mariscal Caceres province, San Martin dept.

4419.0, Radio Frecuencia Lider, 0340-0415v s/off (also heard by Monferini in Italy)

4820.8, Radio Atahualpa seems all-night, heard at 0810.

5039.1, Radio Libertad de Junin active during local daylight at 1400.

6140.0, Radio Huallay, and 6140.3, Radio Concorde, Arequipa, both on at 1215.

66700.2, Radio Santa Monica, Santiago de Chuco, La Libertad, Ecuadorian music program at 2140-2250, not heard afterwards until next day at 1200-1211.

7027.8v, Radio Azangaro, 0240-0440 FM station mentioned it has new SW transmitter for Puno area.

Rafael Rojas Foinquinos, also in Lima, checks in with these:

5040, Radio Libertad de Junin, active at 2310, lost in noise by 2340; huayno music, many timechecks and IDs. (via *Pampas DXing*)

6620v, Radio Tradicion, ex-6543 at 0230.

And a few other contributors for good measure: 5235.5, Radio San Antonio de Padua, Arequipa, reactivated, s/on just before 1000, "difusora mariana" (Gabriel Ivan Barrera, Argentina, RN *Radio-Enlace*)

5323.4, Radio Origen, Huancavelica at 0005, "al servicio de la cultura"

DX Helper

Macintosh Software • W7H

MUF Map • MUF Plot

Gray Line • Great Circle

Prefix, Zone, Oblast

WWW Alert • CW Drill

\$39.95 Info

Antennas West

Box 50062-M, Provo, UT 84606

(801) 373-8425

See band openings on the map before they happen!



Shortwave Broadcasting

(John Ekwall, Sweden, *SW Bulletin*)

ROMANIA RRI wants to please its listeners; for a copy of their opinion poll, or questionnaire, send me an SASE (John S. Carson, 5008 Stonehenge Ln., Norman, OK 73071)



RUSSIA Radio Russia, complete schedule for summer: 1100-1400 to Europe/Asia on 7240, 9720, 9730, 9800, 11690, 11715; Urals 9570, 9640, 9725; Western Siberia 5995, 7220, 9790, 11880, 11895; Eastern Siberia 4395, 11920; Far East 9810, 11850. 1500-1700 W. Siberia on 5920, 5995, 7220, 11880, 11895. 1700-1900 Urals 9640, 9725. 1900-2100 Europe/Asia on 7120, 7355, 9615, 9800, 11830, 17660. 0200-0500 Far East 9810, 11850. 0300-0500 E. Siberia on 11920 (Shigenori Aoki, Radio Japan *DX Corners*)

RWANDA (non?) R. Rwanda, Kigali, reported that so-called Rwandan Patriotic Front has acquired a mobile radio transmitter for propaganda towards Rwanda and foreign countries (BBCM)

SOMALIAS Radio Mogadishu says its 41 mb SW transmitter is being repaired, will soon be working. Radio Somali, Hargeisa, 7121.9, operates 1000-1230, 1500-1700; then station renamed Radio Hargeisa, Voice of the Republic of Somaliland (BBCM) NORTH SOMALILAND declared independence from the rest of the country (BBC news correspondent)

UKOGBANI BBC Woofferton relay of VOA dates back to 1943; VOA no longer needs it so BBC will close Daventry, losing 30-40 jobs, and use Woofferton instead. Sad to lose historic site, BBC's oldest (BBC press release via Sennitt, Thurman, Baxter) Daventry's six 1988-vintage 300-kW transmitters will be transferred to Woofferton, and its displaced six 250 kW will go abroad, probably to Ascension or Singapore (David Porter, WDXC *Contact*)

Spice Taxi is a new programme devoted to pursuing pleasure wherever it is found, hosted by Nigerian actress Toyin Fani-Kayode, a fast, furious ride through the highways and backstreets of urban culture — Saturdays 0430, 1500, 1715, 1830 on BBC's African Alternative (*London Calling*)

Also on BBC's African service is *Against the Tide*, about Ghana's first leader, Kwame Nkrumah, 25 years after his overthrow, for seven weeks starting August 18, Sundays 0430, 0730, 1500, 1715. At 0430 check Ascension on 9600, 15400.

URUGUAY Although listed as Radio Libertad Sport, the station on 6045 identifies as CX18A, Radio Integracion Americana, onda-corta, heard around 1850-1920 with sports (Julian Anderson, Argentina, via Dario Monferini)

USA WWCR hoped to have its second transmitter going by July 20 — check 7345, 12160, 17525. Some programming on 7520 or 15690 may shift to the new frequencies. *World of Radio*, Friday 2130 and Saturday 2330 on 15690 (and temporarily also Saturday 1430 on 15690) hopes to get a permanent weekend evening airtime on one of the 7 MHz frequencies; listen for announcements.

WWCR is doing very well, almost all time sold. George McClintock, manager, says it's because they understand shortwave, and the needs of religious broadcasters; it cannot be operated like a domestic station. Equipment must be state-of-the-art; buy new tubes when needed; requires different audio processing, antennas with low takeoff angles (RNMN)

Several *Radio New York International* programmers, such as Steve Cole, Johnny Lightning, and Al Weiner's partner Randi Steele, resigned following a personal dispute with Weiner, but the program continued via WWCR, UTC Mondays 0100-0500 on 7520. Still on board was Pirate Joe. Some of those who left may turn up on WWCR's other pirate show, *Radio Free New York*, 23 hours earlier (*World of Radio*)

Having filled up WWCR and WHRI, *Radio Miami International* moved on to WRNO, for a "liberal" Cuban exile commentary program UTC Mondays 0200-0300 on 7355; and its own non-Cuban-exile business-oriented programming, UTC Tuesday-Saturday 0100-0300 on 7355, 0300-0400 on 6185 (the latter mistakenly announced at first as 7395, perhaps a planned change).

The first hour is about tourism and legal immigration; the last two are *Hablemos de Negocios* (*Let's Talk Business*), promoting contacts between Latin America and the U.S.A., especially Miami. Unusual for an American SW service, it opens with the *Star Spangled Banner*. Main announcer for the first hour is Fernando Escobar from Colombia (no relation, we hope); Jeff White is behind the scenes, and just married Thais Alicia Silva in Caracas — congratulations!

RMI bumped *World of Radio* from four of its previous WRNO airtimes a month before it was scheduled to expand to weekdays 2100-0400, presumably the first two hours on 15420. After 2 1/2 months of conflict, both Belgium and WRNO abandoned 13720 within a few days of each other. *World of Radio* is still on WRNO Saturdays 2330 on 7355, Sundays 2030 on 15420, Mondays 1530 on 15420.

KJES, which previously registered new frequencies with the ITU, says it doesn't have a transmitter yet, but something may happen in November; address for now has changed to Star Route 300, Mesquite, NM 88048 (Mike Hardesty, NC, *DXLD & WOR*)

VOA's new Tibetan service has been retimed yet again: 0000-0015 on 15250, 17780, 17875, 21570 (Tetsuya Kondo, ABI, Radio Japan *DX Corner*)

USSR Radio Station Peace & Progress suddenly closed down at the end of May, due to reorganization of Soviet broadcasting; funding cut off and personnel thrown out of work though a few got jobs at Radio Moscow (RN *Radio-Enlace*)

Radio Moscow has also been cutting back steadily, down to only 48 languages, 190 1/2 hours per day, but still the biggest external shortwave service (RN *Radio-Enlace*)

Many people formerly with Radio Moscow have moved into private broadcasting with its greater freedom and financial rewards (RNMN)

VIETNAM Son La on 6295 at 1200-1400; Lai Chau wanders each night at 1130-1345, once on 6359, hard to keep track of; Hanoi on 6451 at 1030-1600; Hoang Lien Son on 6600 at 1145-1315; Bac Thai on 6617 at 1200-1400 (Craig Tyson, Western Australia, ADXN)

Lai Chau on new 6430 at 1200-1330, local language until 1300 Vietnamese, ex-6376 (Isao Ugusa, Kobe, Radio Japan *Dx Corner*)

ZAIRE Radio Bukavu, again active on 4848.9, plus or minus 2 kHz from day to day, landed on that frequency at 0415 (Vashek Kovinek, RSA, via Dario Monferini, W.O.R.)

Much more information, especially SWBC, is available in Glenn Hauser's broadcasts and publications. For *World of Radio*, see Costa Rica, and USA (WWCR and WRNO). *DX Listening Digest* costs \$25 for 10 issues in the USA, \$2.50 for a sample in North America, US\$3 or 7 IRCs elsewhere. *Review of International Broadcasting* costs exactly the same, or both for \$47, from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

РАДИО МОСКВА
RADIO MOSCOW



ENGLISH PROGRAMS

MONDAY	NEWS	WELCOME TO VN (FEATURE - TOURISM)
TUESDAY	NEWS	SPORTS & CULTURE
WEDNESDAY	NEWS	LETTER BOX
THURSDAY	NEWS	VIETNAM'S ECONOMY
FRIDAY	NEWS	TALKS OF THE WEEK
SATURDAY	NEWS	WEEKLY REVIEW
SUNDAY	NEWS	SUNDAY SHOW

Frank Orcutt, NY

Broadcast Loggings

*Thanks to our contributors -- Have you sent in YOUR logs?
Send to Gayle Van Horn, c/o Monitoring Times.
English broadcast unless otherwise noted.*

0015 UTC on 4755

BRAZIL: Radio Educacao Rural. Portuguese. Religious programming of sermon and music. Station ID break and brief program announcements. Additional Brazilian Super Radio Roraima heard on 4875 kHz from 0025-0040 UTC. (Sam Wright, Biloxi, MS)

0023 UTC on 9630

SPAIN: Spanish Foreign Radio. "Press Review" discusses Gibraltar. (Fraser, MA) "Panorama" music program, with tune sung by native Spanish band. (Craig Young, Ft. Devens, MA)

0050 UTC on 4960.7

ECUADOR: Radio Federacion. Spanish/Quechua. Announcer chat to Spanish pop vocals. Station ID and closing march style national anthem at 0100 UTC. Ecuador's "La Voz del Upano" heard on 5040.1 at 0120 UTC, with Andean music, time check and ID. (Hilton, SC)

0105 UTC on 9575

ITALY: R.A.I. News story on compulsory vaccination for Hepatitis B. (Fraser, MA) Parallel frequency audible at this hour on 11800 kHz. (Wright, MS) (Brian Bagwell, St. Louis, MO)

0123 UTC on 5982

GUATEMALA: Union Radio. Spanish. Numerous IDs and religious music. Additional ID as "Radio Mundial Adventista." Interference from BBC on 5975 kHz. Station sign-off at 0203 UTC. (David Gasque, Orangeburg, SC) (Carson, OK)

0135 UTC on 4830

VENEZUELA: Radio Tachira. Spanish. Usual good signal quality for Tachira. Local commercials with musical jingles and Latin pops. Station ID and DJ's friendly phone chat. Fair signal for Radio Continental on 4940 kHz at 0400 UTC. ID at the hour with time check. (Davis, AL)

0136 UTC on 17750

USSR: Radio Moscow. Big band music from the '30s and '40s era. (Young, MA) Audible on 4765 at 0158 UTC in Spanish. (Carson, OK) Regional and national news on 11735 kHz at 0203 UTC. One additional log noted as 1134 UTC on 17810 kHz. (Gasque, SC) (Wright, MA)

0153 UTC on 5960

JAPAN: Radio Japan. Discussion on automobiles and their safety systems. (Carson, OK) Monitored on 6120 kHz at 1100 UTC, with Ian McFarland's news roundup. (Leslie Edwards, Doylestown, PA)

0204 UTC on 6070

CANADA: CFRB/CFRX. Traffic report and weather into sports report. Audible on this frequency at 0426 UTC with call-in talk show. (Carson, OK) News, ID, and music heard from 1200-1400 UTC on 6070 kHz. (Gasque, SC)

0208 UTC on 6135

SWITZERLAND: Swiss Radio International. "Dateline" program discussing post war Iraq. (Young, MA) Discussion on Switzerland and the EEC heard on 12035 kHz at 0208 UTC. (Carson, OK) Two additional logs noted as 1122 UTC on 17830 kHz. (Young, MA) and 1338 UTC on 21695 kHz. (Carson, OK)

0230 UTC on 9705

PORTUGAL: Radio Portugal. Station sign-on into international news. National weather report and music program of Portuguese folk tunes. Portugal's Radio Liberty audible on 7190 kHz at 0514 UTC. Pop music and news magazine type show. (Carson, OK)

0323 UTC on 9540

VENEZUELA: Radio Nacional de Venezuela. Spanish/English/French. Traditional South American music to English news at 0336 UTC. Lady with news in French at 0340 UTC. Interference from Trans World Radio on 9535 kHz. (Carson, OK) Additional monitoring from 0330 to sign-off at 0345 UTC. (Bagwell, MO)

0330 UTC on 6165

NETHERLANDS ANTILLES: Radio Netherlands. "Media Network" from Budapest discusses the state of Hungarian radio. (Carson, OK) Trans World Radio monitored on 11815 kHz from 1125-1240 UTC. (Carson, OK) (Young, MA)

0425 UTC on 11840

CHINA: Radio Beijing. "Current Affairs" show "on location in Tibet." Excellent signal quality. (Carson, OK) Central People's Broadcasting Station heard on 11000 kHz at 1204. Chinese newscast from announcer duo. Better signal quality on 11330 kHz. (Gasque, SC)

0427 UTC on 11735

BULGARIA: Radio Sofia. Interview and discussion on Bulgaria's new freedoms, and problems too. (Young, MA) Additional English programs monitored on 15310 kHz at 1430, and 15330 kHz at 2245 UTC. (Bagwell, MO) (Earl Bailey, Oakland, CA)

0430 UTC on 11865

NORWAY: Radio Denmark relay. Danish/English. Sign-on interval signal and ID. International news in Danish. (Carson, OK) Radio Norway monitored on 15335 kHz at 1510 UTC, with program "Rock Box." (Fraser, MA) (Lloyd Van Horn, New Orleans, LA)

0517 UTC on 7255

NIGERIA: Voice of Nigeria. "Morning Flight" program of news and talk. International news and sports report. (Carson, OK) Radio Nigeria audible on 4990 kHz at 2230 UTC. African highlife music and two station IDs. (Frank Jaffee, Creston, KY)

0526 UTC on 15160

AUSTRALIA: Radio Australia. Country and western music show, followed by agricultural news. (Carson, OK) Monitored on 9580 kHz at 1101 UTC, with world news from Iraq, USSR and Mali. (Young, MA)

0532 UTC on 11827

TAHITI: Societe Nationale de Radio-TV Francaise D'outre Mer. French. Great music of Tahiti to ID at 0600 UTC. Newscast and program on the cinema. Improved signal quality after 0600 UTC. (Carson, OK) Monitored on 15170 kHz at 0640 UTC. Tahitian music, ID, and phone-in listeners show. (Lloyd Van Horn, New Orleans, LA)

0657 UTC on 9268 USB

ICELAND: Icelandic National Broadcasting Service. Icelandic. Musical variety of jazz, pop, and opera. Announcer talk and newscast. Audible later at 2331 UTC on 13856 kHz. Sign-off at 2335. (Carson, OK) Heard on 13855 kHz at 1920 UTC, with talk, news, and ID at 1935 UTC. Tentative logging on 11402 kHz at 0120 UTC. (Bagwell, MO)

0755 UTC on 5020

SOLOMON ISLANDS: Solomon Islands Broadcasting Corp. English/Pidgin. English ID in progress at tune-in. Easy listening music to national news in pidgin. Local merchants ads in English, monitored on parallel 9545 UTC. (Carson, OK)

1050 UTC on 4976

COLOMBIA: Ondras del Ortegaza. Spanish. Colombian musical vocals to local ads with jingles. Two clear IDs with time checks. Super Radio on 6065 kHz heard during this hour also. (Wright, MS)

1052 UTC on 9730

PARAGUAY: Radio Nacional. Spanish. Male DJ with chat and items about Paraguay. Carnival style music to ID at 1100 UTC. (Gasque, SC)

1058 UTC on 6020

NETHERLANDS: Radio Netherlands. "Media Network" discussing all modes of communication. Audible on 11890 kHz from 1059-1112 UTC. (Young, MA) Additional log heard at 1509 UTC on 17605 and parallel 13770 kHz. (Carson, OK)

1115 UTC on 17860

GERMANY: Deutsche Welle. World news on Iraq and South Africa. Audible on 17765 kHz at 1129 UTC, with German economic news. (Young, MA) Additional log on 13690 kHz at 2340 UTC. (Carson, OK)

1135 UTC on 6576

NORTH KOREA: Radio Pyongyang. ID and rather dry presentation of traveling through North Korea. Monitored on 11845 kHz and parallel frequency 9835 kHz, at 1600 UTC sign-on. (Jaffee, KY) South Korea's Radio Korea, heard on 9750 kHz at 1243 UTC. Program on Korean sculpture. (Young, MA)

1200 UTC on 11650

NORTHERN MARIANAS: KFBS Saipan. Russian. Religious programming of text and old gospel tunes. (Gigi Lytle, Lubbock, TX) English ID on 11650 at 1259 UTC. (Gasque, SC)

1230 UTC on 15645

BANGLADESH: Radio Bangladesh. Fair signal for sign-on ID at 1230 UTC. International news and commentary on Bangladesh's economy. (David S. Walker, San Diego, CA)

1250 UTC on 21645

FRANCE: Radio France International. Report on France's film industry. (Wright, MS) "Spotlight on France" heard on 17620 kHz at 1628 UTC. (Fraser, MA) (Bagwell, MO) (Steven Holmes, Richmond VA)

1437 UTC on 17770

NEW ZEALAND: Radio New Zealand. Sports roundup show on boxing and rugby. (Carson, OK) Morning show heard on 9700 kHz at 1050 UTC, with national and local news interest. Station ID and lite pop tunes. (Fraser, MA) (Wright, MS)

1520 UTC on 17575

MADAGASCAR: Radio Netherlands relay. Travelog program. Recheck at 1833 UTC on 15570 kHz, with "Media Network." (Carson, OK)

2205 UTC on 9590

UNITED KINGDOM: BBC World Service. "Seeing Stars" program featuring the Royal Observatory at Edinburgh. World Service also monitored on 15070 kHz at 1630 UTC with sports report. (Fraser, MA)

2250 UTC on 4870

BENIN: Office de Radiodiffusion et Television du Benin. French Big Band music at tune in. Frequency/ID quote to national anthem. Station sign-off at 2301 UTC. (Gasque, SC)

2330 UTC on 7215

COTE D'IVOIRE: Radiodiffusion TV Ivoirienne. French. Announcer duo with chat and French Afro pops. Two additional U.S. pops to ID and sign-off routine. National anthem close down at 0001 UTC. Tune-in at 0555 UTC with sign on interval signal, ID and anthem. News at the hour. (Jaffee, KY)

2335 UTC on 6180

BRAZIL: Radio Nacional-Amazonia. Portuguese. Brazilian pops and vocal ballads. Audible on parallel frequency 11780 kHz from 2140 UTC. (Van Horn, LA)

2340 UTC on 4985

BRAZIL: Radio Brazil Central. Portuguese. Station ID at tune-in and acoustical style music. ID repeat at 2345 UTC. (Gasque, SC) Two additional Brazilian stations heard as Radio Record, at 0050 UTC on 9505 kHz, and Radio Alvorada's sign-on at 0858 UTC on 4965 kHz. (Rod Pearson, St. Augustine, FL)

2345 UTC on 13605

UNITED ARAB EMIRATES: UAE Radio-Abu Dhabi. English/Arabic. Holy Koran recitations to English facts about the U.A.E. Arabic talk and music commencing at 2355 UTC. (Wright, MS)

2350 UTC on 4890

SENEGAL: Office de Radiodiffusion-TV du Senegal. French/vernaculars. Koran recitations at tune-in to 2354 UTC. African style music to 2359 UTC. French program announcements to tone signal at 0000 UTC. Brief news headlines and music, to abrupt sign-off at 0004 UTC. (Gasque, SC)

Larry Van Horn
c/o MT, P.O. Box 98
Brasstown, NC 28902

Making Time

Time, Time, Time. I just never seem to have enough time. This month is no exception. Thanks to the Navy and a heavy work load, time has been on my mind a lot, so what better time to talk about -- yep, you guessed it -- Time Stations.

I bet the first utility station you ever monitored was probably the Time Station WWV or WWVH. (That's right folks, time stations are considered utility stations.) What is not widely known is that there are more time stations than just WWV and WWVH. The long hot dog days of summer are a good time to try your hand at hearing a series of stations that most utility DX'ers forget about.

U.S. Standard Time

We will start our tour with WWV/WWVH/WWVB, the easiest stations to hear. These stations are run by the National Institute of Standards and Technology.

WWV is located at Fort Collins, Colorado. It transmits time and other information on what are called standard frequencies. In fact, you can calibrate your receiver dial to the carrier of WWV to check the accuracy of your frequency readout. WWV transmits continuously day and night using standard carrier frequencies 2.5, 5, 10, 15 and 20 MHz.

WWV's sister station is WWVH, located on the island of Kauai, Hawaii. They also use standard frequencies but not as many as WWV. Frequencies include 2.5, 5, 10 and 15 MHz.

There is also another station run by the National Institute that many folks overlook. That station is WWVB also located at Fort Collins. They transmit a 13 kilowatt (13,000 watts) and a special BCD (Binary coded decimal) time code on 60 kHz.

The broadcast formats of WWV and WWVH include voice time announcements every minute. To eliminate confusion between the two stations, the WWV time announcements are made by a male and WWVH uses a female voice. At about 7-1/2 seconds prior to the minute WWV makes their time announcement. The announcement will go something like this: "At the tone .. hours .. minutes Coordinated Universal Time" (commonly known as UTC).

WWVH basically gives the same announcement about 15 seconds before the minute, of course using a female voice. The terms GMT and Z or Zulu time are accepted as the general equivalent of UTC in navigation and communication.

Both stations also transmit standard audio tones 45 seconds after the minute of 500 and 600 Hz on alternate minutes. The top of the hour is marked for 0.8 of a second by a 1500 Hz tone.

Time isn't the only thing you will hear on WWV/WWVH. Weather information is given in plain language. You can catch weather from WWV at 8, 9 and 10 minutes past the hour and from WWVH at 48, 49, 50 and 51 minutes past the hour.

Solar propagation information and navigation information broadcasts can also be heard on these two stations. Station identification announcements are given for WWV at 1 and 31 minutes past the hour. WWVH broadcasts its ID at 30 and 60 minutes past the hour.

You can get more information on these three stations by sending your request to:

Station WWV/WWVB
2000 East County Road 58
Fort Collins, Colorado 80524

Station WWVH
PO Box 417
Kekaha, Kauai, HI 96752

Oh, I almost forgot, all three stations are excellent verifiers. You can send your reception reports to the addresses above to receive an attractive QSL card.

Canadian Time

Canada also has a time station which is widely heard: CHU in Ottawa, Ontario. The station is operated by the National Research Council. As you can see by the following list of frequencies, CHU does not use standard frequencies for their broadcast:

3330 kHz (3 kW) 7335 kHz (10 kW) 14670 kHz (3 kW)

CHU has voice time announcements in both English and French using Eastern Standard Time instead of UTC. The address for more information and reception reports is:

Radio Station CHU
National Research Council
Ottawa, Ontario, Canada K1A 0R6.

Clocks Heard 'Round the World

Several other countries also broadcast time information and most of them can be widely heard with some patience and time at the dials. In recent years, a number of these stations have closed down due to increasing cost. A letter or reception report to these stations will help in keeping them on the air. Active listeners are as good as bucks when it comes to proving their usefulness.

On the facing page you will find a quick tour of the 28 countries broadcasting time signals around the world (DX'ers count Hawaii as a country for counting purposes). Keep in mind that the low frequency stations will be best heard during the winter months when static is at its lowest and the night time hours is at its longest.

If you are interested in seeing more on time stations drop me a line. Now fire up that receiver and give time some time.

Speaking of Low Band

Clifford Kendall has been doing some radio basement listening from the basement level of his house in Altoona, Pennsylvania. Using a Sony ICF-2010 with only the built-in ferrite rod antenna he managed to catch ZBB on 396 kHz.

ZBB is an aeronautical non-directional CW (Morse code) beacon in the Bahamas. The station is located at the South Bimini Airport and runs 2000 watts. Elevation is only 10 feet above sea level. In addition, Clifford also has caught what he thinks is a Canadian beacon on his Sony, CB with a long dash following on 414.1 kHz.

Clifford, I think you might have been hearing CBC on Cayman Brac (a island in the Caribbean that is widely heard) using 100 watts. There is a Canadian beacon on 414 using BC as an ID that is located in Quebec that transmits with 500 watts. All of these would be good catches on your radio. Good luck and thanks for the note.

Edward Mathes in Farmington, New York, has come to Tom Trocchio's rescue. Tom listed some NDB's in the February issue and Edward has attached some ID's on them. Here is the list:

CDI actually 223 kHz Cambridge, Ohio
EZE actually 226 kHz Engel, Ohio

Additional Time Standard Stations

Country	City	Call Sign	Frequency	Time
Argentina	Buenos Aires	LOL	5/10/15 MHz	1100-1200, 1400-1500, 1700-1800, 2000-2100 and 2300-2400
Australia	Canberra	VNG	5/10/15 MHz	5 MHz 24 hours, 10/15 MHz 2200-0700
Brazil	Rio de Janeiro	PPE	8721 kHz	0025-0030, 1125-1130, 1325-1330, 1825-1830, 2025-2030 and 2325-2330
Brazil	Rio de Janeiro	PPR	435, 500, 4244 4247.5, 8634, 8492, 12687, 12738, 17194.416984, 22352 22420 kHz	
Chile	Valparaiso	CBV	4298/8677 kHz	0125-0130, 1425-1430, 2125-2130 1155-1200, 1555-1600, 1955-2000 0055-0100 (1 hour earlier from October 15-March 15)
China	Xian	BPM	5000 kHz 5430 kHz 9351 kHz 10000 kHz 15000 kHz	1400-2400 1000-1800 (every 2 hours) 0600, 1100-2300 (every hour) 24 hours 0000-1400
Czechoslovakia	Prague	OMA	50 kHz	24 hours
Ecuador	Guayaquil	HD210a	1510 kHz 3810 kHz 5000 kHz 7600 kHz 162 kHz	24 hours 0500-1700 1700-1800 1800-0500
France	Allouis	DCF77	77.5 kHz	24 hours except Tuesday 0100-0500 for maintenance
Germany	Mainflingen	VPS	500 kHz	24 hours
Hong Kong	Kowloon	VPS8	4232.5 kHz	every even hour
		VPS35	8539 kHz	every odd hour 1100-2100
		VPS60	10020.4 kHz	every odd hour
		VPS80	17096 kHz	every odd hour 0100-1500
		VPS22	22536 kHz	every odd hour 2100-1300
India	New Delhi	ATA	5000 kHz 10000 kHz 15000 kHz	every odd hour 0100-0900 1230-0330 24 hours 0330-1230
India	Calcutta	VWC	434/4286 kHz 434/12745 kHz	1625-1630 0825-0830
Indonesia	Jakarta	PKX	8542 kHz	0045-0100
		PLC	11440 kHz	0045-0100
Italy	Rome	IAM	5000 kHz	0730-0830, 1030-1130 (During summer, one hour earlier)
Italy	Turin	IBF	5000 kHz	0645-0700, 0845-0900, 1045-1100 1145-1200, 1245-1300, 1345-1400 1445-1500, 1545-1600, 1645-1700 1745-1800 (during summer one hour earlier)
Japan	Tokyo	JJJ	2.5/5/8/10/15 MHz	24 hours
Korea	Taejeon	HLA	5000 kHz	24 hours
Peru	Callao	OBC3	8650/12307 kHz	1555-1600, 2055-2100, 0155-0200
Philippines	Subic Bay	NPO	4445/10440.5 12804 kHz	0555-0600, 1155-1200, 1755-1800 2355-2400
South Africa	Capetown	ZSC	418/4291/8461 12724/17018/22455 kHz	0755-0800, 1655-1700 1029-1055 12008 kHz 0959-1025
Spain	San Fernando	EBC	6840 kHz	0553-0600, 1323-1330
Sri Lanka	Colombo	4PB	482/8473 kHz	24 hours
Switzerland	Prangins	HBG	75 kHz	24 hours
Taiwan	Chung-Li	BSF	5/15 MHz	24 hours
USSR	Gorki	UTR3	25/25.1/25.5 23/20.5 kHz	0536-0617, 1336-1417, 1836-1917
	Khabarovsk	UQC3	same as Gorki	0036-0117, 0636-0717, 1736-1817
	Moscow	RWM	4996/9996/14996 kHz	24 hours
		RBU	66.66 kHz	24 hours
	Irtutsk	RID	5004/10004/15004 kHz	24 hours
		RTZ	50 kHz	0100-2400
		RW-166	198 kHz	2200-2100
	Novosibirsk	RW-76	272 kHz	24 hours
		RTA	10000 kHz	0200-0500, 1400-1730, 1800-0130 15000 kHz 0630-0930, 1000-1330
	Tashkent	RCH	2500 kHz	0500-0400 5000 kHz 1400-0400
			10000 kHz	0500-1330
U.K.	Rugby	MSF	60 kHz	24 hours except on 1st Tuesday down for maintenance from 1000-1400
Venezuela	Caracas	YVTO	5000 kHz	24 hours

MRT actually 263 kHz Marysville, Ohio
MLR actually 382 kHz Millersburg, Ohio
HBD Hubbard beacon, outside Youngstown, Ohio

Edward also believes the station Tom identified as F2I (Fostoria, Ohio) is actually FZI (probably typo). These identifications came from the *Enroute Low Altitude-US Flight Information* publication available from the FAA. Thanks a bunch for the ID's, Edward.

Just the FAX Please

Several responses came in to our item on FAX in the March issue. Jerome Grokowsky, WA9HCZ; Wally Lamb, W0PHD; Hank Johnson, WBOUR; and Jerry Jensen, WT0W sent a note to let ute readers know they operate a FAX net in the amateur bands. This is probably a good spot

to sit and check out some pics on your FAX machine. The net meets on Saturday mornings from 1400-1600 UTC on 7170 kHz. Thanks to Jerry for shipping that info to us.

Bob Pettengill has also been doing a lot of FAX monitoring and recently got a nice map from JMJ in Tokyo, Japan. Let us know what success you have with the frequencies in the March issue, Bob.

Don't forget to send in your favorite Ute Top 10 frequency list (see July column) to the address in the masthead. The deadline is September 15 and you have a chance to win a printout of my personal utility bands frequency database. That list continues to grow each month, so don't delay; Send them in today. Also be sure to get your reservation in now for the MT Convention utility forums, since space is limited.

'Til next month, good ute DX all around and now let's see what you have heard this month in the Utility World...

Utility Loggings

Abbreviations used in this column

AB	Air Base
AFB	Air Force Base
AM	Amplitude Modulation
AUTOVON	Automatic Voice Network??? (check with Bob)
CANFORCE	Canadian Forces (military)
CAP	Civil Air Patrol
comms	communications
CW	Continuous Wave (Morse Code)
FM	Frequency Modulation
GCCS	Global Command Control System
Green	Scrambled communications
H+	minutes past the hour
ID	Identification
IRC	International Reply Coupon
ISB	Independent Side Band
MAC	Military Aircraft Command
MARS	Military Affiliate Radio System
MHz	Megahertz
Net	Network
Ops	Operations
QSL	Verification Card or letter
RAF	Royal Air Force
RFE	Radio Free Europe
RSGB	Radio Society of Great Britain
RTTY	Radio teletype
RY	Typical test tape using characters R and Y
SAC	Strategic Air Command
SITOR-A	Simplex teleprinting mode A (ARQ)
SITOR-B	Simplex teleprinting mode B (FEC)
TAC	tactical
Unid	Unidentified
URSIGRAM	Propagation forecast message
USAF	United States Air Force
USB	Upper sideband
USN	United States Navy
V marker	CW frequency marker (VVV)
VFT	Voice Frequency Telegraphy (sometimes known as FDM)

All frequencies are in kilohertz (kHz) unless otherwise stated, all times in UTC (Universal Time Coordinated).

- 518.0 GCC-Cullercoats Radio, UK with SITOR-B/NAVTEX broadcast consisting of navigational warnings, oil rig location list. Scheduled H+48. (Dunnett-UK) Also at 1648. (Ary Boender-The Netherlands)
- PBK-Netherlands Coast Guard NAVTEX with navigation warnings at 1950 in SITOR-B. (Boender-Netherlands)
 - GNI-Nilton Radio, UK with NAVTEX navigation/gale warnings in SITOR-B at 1618. (Boender-Netherlands)
 - GPK-Port Patrick Radio, UK with NAVTEX navigation warnings in SITOR-B at 1730. (Boender-Netherlands)
 - OST-Oostende Radio, Belgium with NAVTEX navigation warnings in SITOR-B at 2318. (Boender-Netherlands)
- 2357.5 OUA32-Danish Naval Radio Stevns with V CW marker at 1546. (Boender-Netherlands)
- 2474.0 PCB32-Netherlands Naval Radio Goeree with RTTY RY test tape at 2034. (Boender-Netherlands)
- 2691.0 DHJ51-Grengel Meteo, Germany with RTTY weather at 2023. (Boender-Netherlands)
- 3187.3 GXW-Royal Naval Radio Portland, UK with foxes/RY RTTY test tape. (Boender-Netherlands)
- 3494.0 Stockholm Radio, Sweden "with a test over western North America on three four nine four kilohertz" at 0110 in USB. (H.S.-San Diego, CA) Interesting they didn't verify. Try including a prepared QSL form and some mint stamps or IRCs and send the report to them again-The Chief.
- 3812.3 GAM1-RSGB Rumored to be RSGB 'URSIGRAM' propagation forecasting station. Supposed to pass forecast in CW & RTTY. Only

- V markers heard to date. Full info on this station is sought. If it is what it is said to be, it's a pretty crass choice of frequencies as it is outside (UK) 80 meter allocation and so technically illegal for amateurs to listen to it. Isn't our government clever? (Dunnett-UK) *Yep just like ours sometimes, don't let me catch you listening, hi, hi-The Chief.*
- 4346.0 YUR-Rijeka Radio, Yugoslavia with CW V marker at 2129. (Boender-Neth)
- 4373.0 Quebec 3 November working Giant Killer. Q3N asked ETA of E-2 and mentioned comms on 291.2 (Giant Killer UHF TAC Ops channel). (Henry Brown-East Falmouth, MA)
- 4383.8 Radio Pajaritos, Mexico with weather forecast for Gulf of Mexico in Spanish and USB at 0338. (Miguel Angel Reyes-Morelia, Mexico) *Welcome. Nice to have a Spanish speaking contributor; we can use some help on Spanish ute stations-The Chief.*
- 4497.0 SOE349-Warsaw meteo, Poland with RTTY weather at 2140. (Boender-Neth)
- 4632.5 FSB-Interpol Paris, France with SITOR-A idler tones and FSB CW marker at 0635. (Fernandez-MA)
- 4710.0 RAF Boulter, UK working an aircraft in reference to radar tracking operations in USB at 0625. (Fernandez-MA)
- 5080.0 Thunderbird 67 (AZ CAP) Net control calling any T-Bird station with traffic using USB. Heard earlier on 148.150 MHz FM at 0146. (Scott Burke-Tucson, AZ)
- 5287.0 Heard CW 5-letter groups, no ID at 1235. (Penson-MN) Mexican military bases transmitting weather forecast and information at 0310 in USB. (Reyes-Mexico)
- 5437.0 Israeli Mossad letter station with female sending 5-letter groups at 0411 in AM. (Fernandez-MA)
- 5683.0 2 unid English speaking males exchanging personal information. Noise was so loud they tried channel 99 (???-The Chief) at 0440 in USB. (Burke-Tucson, AZ)
- 5700.0 Pipeline to 05A, 05B, 05C and Bison with an immediate exercise message, "Proceed to Thompson for Medevac and further info." Channel 1-5700, channel 2-6712, channel 3-11191. Possible CANFORCE comms. (Burke-AZ)
- 5790.0 Mexican military operations heard in USB at 0300 in Spanish. (Reyes Mexico)
- 5795.0 Unid British military 0A calling 5) for radio checks in USB at 1000. (Dunnett-UK)
- 5930.0 Spanish female 4-digit number station in AM at 0225. (Penson-MN)
- 6657.0 Single letter HF beacon 'E' in CW at 1700. (Leonard Szalony-Fontana, CA)
- 6683.0 Noble Lad working Albrook GCCS from 0024-0202 with several messages. Patch to unknown ground station in the Philippines to advise that the HF station would have no power once Jackpot left the deployed location. Also did phone patch to autovon 968-5679. Andrews also on frequency and walked on all comms in USB. (Bill Battles-NH)
- 6761.0 Hawk 86 (SAC Bomber) working Raincoat with a phone patch to Blue Thunder Control (96 BW-Dyess AFB, TX) in USB at 0441. (Ranger Rick Dettmann-Buffalo Grove, IL)
- 6825.0 Spanish female 5-digit number station in AM at 0700-0716, Friday UTC. (H.S.-CA) At 0705 in AM. (Fernandez-MA)
- 6840.0 Spanish female 4-digit number station in AM at 0210. Parallel to 9220, 10600, and 11530. (Reyes-Mexico)
- 6867.0 Spanish female 5-digit number station in AM at 0535. (Fernandez-MA)
- 7073.0 Mexican emergency network (Ham Radio) in LSB at 0100. (Reyes-Mexico)
- 7413.0 Piccolo tones started slowly and increased in speed in AM at 0320. (Skip Harwood-Beale AFB, CA)
- 7422.0 Spanish female 4-digit number station in AM at 0415, parallel to 11533.0 (Harwood-CA)
- 7646.0 DDH7-Hamburg Meteo, Germany with RTTY 50 baud RY test tape/calls and frequencies at 2043. (Dunnett-UK)
- 7650.0 BZR67-Xinhua News agency, Beijing China with RY test tape and English news propaganda at 2039 using 75 baud RTTY. (Dunnett-UK)
- 7846.0 Spanish female 5-digit number station in AM at 0900-0917, Monday UTC. Also heard Tuesday UTC 0900-0931. (H.S.-CA)
- 7862.0 Spanish female 5-digit number station in AM at 0800-0812, Monday UTC. Also noted some 4 and 3 digit number groups. Transmission parallel to 8136. (H.S.-CA)
- 7880.0 English female 5-digit number station in AM at 0230. (Harwood-CA)
- 8090.3 Single letter HF beacon 'T' in CW (Szalony-CA)
- 8136.0 Spanish female 5-digit number station in AM at 0800-0814, Monday

UTC, parallel to 7862.0. (H.S.-CA)

8452.6 VAI-Vancouver Radio, BC Canada with CW CQ marker at 0513. (Szalony-CA)

8681.9 Single letter HF beacon 'O' in CW at 1954. (Szalony-CA) Single letter HF beacon 'M' in CW at 1954. (Szalony-CA)

8989.0 Old Salt (USS Nimitz) working Beaver Control concerning a large rubber raft found adrift with 1 foot of water inside, and blood stains. No ID on the raft, communications in USB, no time given. (Norman Anderson-Santa Ana, CA)

• Dragon 9 calling Dragon flights, primary frequency 8600, secondary 8800 at 1833 in USB. (Burke-AZ)

9023.0 Darkstar Oscar+November with Okie Sam doing a roll call on channel Delta 14 at 1110 in USB. (Burke-AZ) *Darkstar callsign are the AWACS aircraft-The Chief.*

9060.0 English female 5-digit number station in AM at 0500. Station pegged my S-meter. (Harwood-CA)

9120.0 Spanish female 3-digit number station in AM at 0230. (Reyes-Mexico)

9222.0 Spanish female 4-digit number station in AM at 0300. (Harwood-CA)

9251.0 English female calling 92886 followed by same piccolo tones heard earlier on 7413.0 in USB at 0400. Started 5-digit groups at 0420. (Harwood-CA)

9255.0 Spanish female 5-digit number station in AM at 0400. (Harwood-CA)

9260.0 Carpenter and Stingray exchanging Saddam jokes and what was served for chow. A sweet sounding Marshmallow broke in and wanted a headphone chat with Stingray in USB at 0510. Had to be Navy. (Harwood-CA) *We are not that lucky Skip, probably USAF-The Chief.*

9371.0 Rock music interrupted by "This is test, your 28 ring down is not making it to Travis, we have trouble shot this line and its fibers, to me it looks like a 28 problem, out." Music continues for several more minutes and I ded as 105.1 FM in LSB at 2145. Local 105.1 is all country. (Harwood-CA)

10072.0 Speedbird 467 calling Speedbird London engineering department regarding a flap problem near #2 engine in USB at 0625. Also heard American 110 with a call to Berne Radio at 0645 in USB. (Mary Anne Kehoe-Atlanta, GA) *Welcome; hope you report often-The Chief.*

10194.0 Unid aircraft with phone patch to TAC ops Langley AFB (Raymond 01) asking which is the active runway for landing. At 1751 in USB. (Burke-AZ)

10643.9 Single letter HF beacon 'S' in CW at 1010. (Szalony-CA)

11071.0 Xray 1 working Xray 2, "Have suspects re-entered the boat yet?" Then went green. Xray 0 said something about 'shooting it down' but needed to consult with higher authority. USS Caron (DD-970) had intercepted the hostile vessel. Xray 1 Kilo to Xray 0 Charlie - conduct and board suspect vessel 'Allah Kabba Nana' according to Operation Task Intercept. Several rounds fired across her bow before she stopped. DEA or customs channel? (Burke-AZ) *Customs-The Chief.*

11108.0 German female number station with Papa November repeated until call-up then into several short text at 1835 in AM. (Fernandez-MA)

11153.0 SAM 972 working SAM command with ETAs and the usual stuff, but he also requested 200 dinner towels, 200 hand towels and 150 dish towels, colored blue or beige be made available when they landed. 20 passengers on board along with the crew. In USB at 1330. (Gary Inman-Norris, TN) *Messy little devils aren't they?-The Chief.*

11176.0 USAF GCCS Ascension Island station working Air Evac 10E1 at 0425 in USB. Wanted weather for Ramstein AB, had just left Turkey. (Dettman-IL)

• Impact 30 (C-130 aircraft) tail #981 working Ascension GCCS and Bandit Control. Aircraft was having landing gear problems. In USB at 0348. (Brown-MA)

11233.0 CANFORCE 34 working Trenton military in USB at 1803 enroute from Andrews to Ottawa and requested a large pizza from Pizza, Pizza, fully dressed. (Battles-NH) Ditto above caught the same transmission. (Fernandez-MA)

11239.0 Dolphin (Navy ship out of San Diego) reporting damage to the ship. Skipper said he would file a "JAG???" via telex ASAP. In USB, no time given. (Anderson-CA) *JAG stands for Judge Advocate General and ASAP (As Soon As Possible)-The Chief.*

11533.0 Spanish female 4-digit number station in AM at 0415, parallel with 7422. (Harwood-CA)

13518.0 English female 3/2-digit number station in USB (?) at 1430. (Robert Falk-Phoenix, AZ) *Welcome, hope you check in frequently-The Chief.*

13941.0 HNI-Unid station sending the following "BSR (bon soir) Priere de me communiquer le TPH de ANYS. Mci. KKKK" using SITOR-B at 1908. (Dunnett-UK)

14402.0 Foghorn heard at regular intervals wiping out Army MARS comms at 0330. (Penson-MN)

16593.3 Heard both sides of KWS578-Newport, RI BOC Challenge Control in USB working yachts at sea taking part in the around the world alone

race.Yachts Buttercup, Spirit of Ipswich and Global Exposure, all in vicinity of Cape Horn, South America. Also heard MTF-Falkland Islands stations giving local weather report at request of Yacht Buttercup. Heard between 2330 and 2345 in USB. (Nick Kucij-Milton, VT) *The Falkland station is a pretty rare catch Nick congrats and welcome to the column-The Chief.*

16672.0 OXTE-Danish ship Karen Maersk with telexes using SITOR-A at 1925. (Dunnett-UK)

16678.0 ELAS9-Liberian ship African Fren using SITOR-A sending current position, telexes and bound for Belfast. (Dunnett-UK)

16693.0 DHS-Rugen Radio, Germany with telegrams for german ship Y5AD then press and ship's positions at 1936 using SITOR-B transmission mode. (Dunnett-UK)

17134.0 UNM2-Klaipeda Radio, USSR with RTTY 170/50 traffic then CW traffic list at 1905. (Dunnett-UK)

17170.0 Israeli Mossad letter station with KPA2 marker broadcast at 2214. (Fernandez-MA)

18007.0 Mishap working PACAF 01, PACAF 01 asked Mishap to contact Andrews that PACAF 01 was working Mishap as primary in USB at 0912. (Greg Williams-APO San Francisco, CA)

18145.0 Radio A9YD calling Sista on RA9YD network in USB at 0217. (John Robinson-Antioch, TN) *What is this???-The Chief.*

19043.1 JCU-Choshi Radio, Japan with CW CQ marker at 1951. (Szalony-CA)

19075.0 Foghorn in progress and still going when I went to bed at 0338. (Penson-MN)

19410.0 WA620 working WA644 sending RTTY test messages and communicating in USB. Test message mentioned using PK-232 with the HF 8070A radio system. I think these are FAA stations, at 0020. (Inman-TN) *This is a SHARES network channel so it is really hard to say who it is-The Chief.*

19497.0 MAC aircraft 479 calling "any MARS station," but no replies in USB at 1917. (Fernandez-MA)

20215.0 RFE Feeder, Holzkirchen, Germany in ISB, 2 different programs - music/voice in Slavic language at 1900. (Fernandez-MA)

20320.0 GXQ-Ministry of Defense, London, England using VFT/50 baud channel with RY test tape and Identifications at 1338. (Dunnett-UK)

20747.0 Israeli Mossad letter station female with call up then 5-letter groups in AM at 1730. KPA2 marker after broadcast. (Fernandez-MA)

20870.0 Alpha Sierra Sierra? (Oh my what a callsign) working Berne Radio at 1745 with phone patch traffic followed by "My compliments to the RAF." (Battles-NH)

21754.0 Oakleaf with long SAC type EAM. Had someone make him laugh. Also exchanged radio check with Animal in USB at 0430. (Harwood-CA) *Bill Battles take note another possible new SAC channel-The Chief.*

21901.0 Single letter HF beacon 'T' in CW at 2348. (Szalony-CA)

22577.0 UJQ/RNB27-Kiev Radio?? with 170/50 Cyrillic RTTY and CW at 1309. Noted 73 SK CL then working UHCF in CW. (Dunnett-UK)

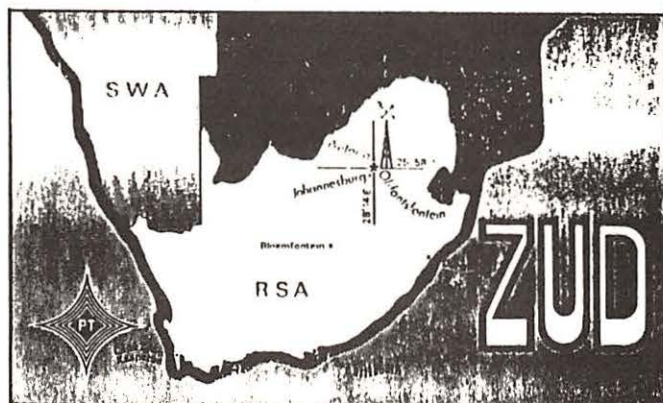
22607.1 LPL-General Pacheco Radio, Argentina with voice marker, female in Spanish at various times in USB. Anybody have the address? (Williams APO CA) *Yep, try: Seccion Planta Receptora Don Bosco; Lomas de Zamora 252; Don Bosco; Buenos Aires, Argentina-The Chief.*

23104.0 English female 3/2-digit number station in AM at 1734. (Fernandez-MA)

23265.0 Two stations performing RTTY test transmissions in USB. They identified the frequency as Xray 909. This may be a new SAC frequency. (Falk-AZ) *Yep it is Robert, thanks-The Chief.*

23977.0 KKN50-State Department Radio, Warrenton, VA with standard QRA marker in CW at 1645. (Bob-Goldthwaite, TX)

26156.0 UJY-Kaliningrad Radio, USSR with 50 baud Cyrillic RTTY telegram traffic to Soviet ship ESJJ. *Soviet factory trawler Vasilyi Kozenkov per Gayle's new callsign book-The Chief.*



The Scanning Report

Bob Kay

c/o MT, P.O. Box 98
Brasstown, NC 28902

Up on the Roof

See if this sounds familiar... When you first purchased your scanner radio, the last thing on your mind was erecting a roof top antenna. But as you became more familiar with the hobby, you began to wonder -- would a roof top antenna help to improve your reception?

If you're nodding your head in agreement, here are a few hints and ideas that will help you to decide if you really need an outside antenna.

The best method for determining the value of an outside antenna is to visit a fellow scanner buff who already has one. Ideally, the elected candidate should live within a few miles of your home. If you discover that you're envious of his or her reception, it's time to return home and erect a scanning antenna of your own.

Can't find a likely candidate for comparison? Then you might try scanning in your attic. Simply take your radio to the highest point inside your home and listen. If your reception improves, it's time to seriously consider an outside antenna.

Readers who have attics often get good results with an antenna that is simply placed on the attic rafters. Don't worry about grounding the antenna. Your only concern will be routing the coax to your radio. Sometimes it's easier to run the coax out the attic window, down alongside the outside wall, and then into a lower floor window.

The type of dwelling in which you live is another factor that must be considered. Wooden structures offer little resistance to radio signals. Scanner listeners who live in metal trailers or in homes that have been covered with aluminum siding are not so lucky. Metal siding can reflect radio waves and prevent them from reaching your indoor antenna.

If you live in or near a large city, you can usually get good reception with nothing more than an indoor, telescoping antenna. City radio signals are very strong, and in some situations, an outside antenna can overload your scanner with multiple signals. When this happens, it's commonly referred to as intermodulation or "intermod."

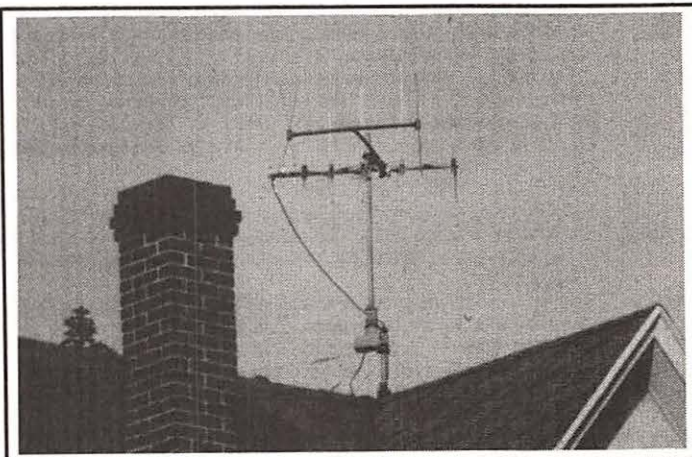
On the other hand, suburban dwellers that live within 50 miles of a large city, will find that an outside antenna will allow them to monitor the big city scanning action. If there isn't a major metropolis nearby, don't get discouraged. In rural areas, an outside antenna will help to extend your listening range to the maximum distance.

OK, you've decided to install a roof top antenna. There's still one final question—what type of antenna should you buy? To help you decide, let's take a brief look at three of the most popular scanning antennas.

The "ground plane antenna" usually contains one vertical element and three ground plane rods, which extend horizontally from the base. A ground plane antenna is capable of amplifying the received signal, a characteristic commonly referred to as "gain." Gain is expressed in "dB's" (decibels). A typical ground plane antenna will usually produce about 3 dB's of gain. The higher the number, the stronger the signal that is delivered to your scanner radio.

Ground plane antennas are constructed to receive or "resonate" on a specific group of frequencies. Always remember to check the frequency range before you buy. It makes little sense to use a 800 megahertz scanner radio with an antenna that can only receive signals to 500 megahertz.

Discone antennas look like the skeleton of an umbrella. Unlike ground planes, discone antennas cannot amplify a received signal. The antenna merely captures the radio signal and sends it to your scanner



Are you thinking about a rooftop scanning antenna? If so, check out Kay's antenna hints and ideas in the Scanning Report!

radio. Unlike ground planes, which are limited to a specific range of frequencies, discons don't discriminate—if there's a radio signal out there, a discone will capture it.

At first glance, the discone antenna appears to be the ideal antenna. But don't forget the key factor. Radio signals that are too weak for detection by your scanner radio cannot be amplified by the antenna. In areas where radio signals are weak, discone antennas are commonly used with a preamplifier.

Beam antennas have several vertical elements that are mounted on a horizontal bar. The beam is a directional antenna that is noted for its ability to provide high gain. Since the antenna is more sensitive to radio signals arriving from the front, it can be rotated and "aimed" for pinpoint accuracy.

I know what you're thinking. Which antenna do I use? Actually, I use all three, but I won't leave you with such an evasive answer. For base station use, my favorite scanning antenna is the Grove Scanner Beam. The Scanner Beam is a light weight antenna that is a top performer between 30 and 900 megahertz. Best of all, it can be installed in a fixed position, or turned with an inexpensive TV rotor. For additional information, contact Grove Enterprises, P.O. Box 98, Brasstown, NC 28902, or call (704) 837-9200.

Choosing an antenna for your listening post can be a lot of fun. Your selection will depend heavily upon your location and the agencies that you want to monitor. If you're still undecided, send your comments with an SASE, to the Scanning Report, (UP ON THE ROOF), P.O. Box 98, Brasstown, NC 28902.

Treasure Hunt

If you were with us last month, you already know that the folks at DIGITAR have donated a state-of-the-art weather station for the July/August Treasure Hunt. The "Weather Master" is a complete weather station that will attach directly to your existing antenna mast. If you're chosen as our lucky winner, you'll receive a precision anemometer, wind vane and outside temperature sensor.

The control unit features the latest in technology. From within your listening post, you can measure the barometric pressure, altitude, wind

speed, high wind gust, wind direction, inside/outside temperature, windchill, accumulated rain fall (with the optional rain collector), temperature alarms, time and wind speed. Here are the clues:

1. Falling barometric pressure usually indicates fair weather. True or False?
2. What is the meaning of the abbreviation, "NOAA?"
3. Name a scanner radio that has an instant weather access button.
4. Name three basic cloud formations.
5. Convert 70 degrees Fahrenheit to Celsius.

DIGITAR has a color catalog that features their complete line of weather stations. They even have a computer card that will fit into your computer! To receive DIGITAR's catalog, give them a call at 1-800-678-3669. The address is 3465 Diablo Avenue, Hayward, California 94545.

Frequency Exchange

In **Seattle, Washington**, the police department utilizes a special frequency that is referred to as "Blue Dot." A scanner buff named "Brian," says that when the police go to "Blue Dot," he can't find their frequency. Can anyone help?

In the meantime, here are a few of Brian's favorite frequencies:

Seattle Police	King County Police
460.075	153.160 Search & Rescue
460.125	155.415 Sknohomish Sheriff
460.175	155.760 Sheriff car to car
460.250	155.910 Sknohomish Jail
460.425	156.210 Small town net
460.475	
Seattle FBI	Seattle Miscellaneous
163.965	149.575 MP's Fort Lewis
164.166	153.755 Pager, King Co. Jail
167.415	158.130 Seattle Power & Light
158.145	" "
451.150	" "
452.975	Seattle Post-News Paper
453.900	Woodland Park Zoo

Do you live in or near **Kansas City, Missouri**? If so, I've got a one page list that was sent in anonymously. Here's a sampling of the frequencies:

Kansas City Police	Kansas City Hwy. Patrol
154.710	44.940
154.740	45.180
154.860	
154.890	Turnpike Authority
155.850	
155.640	151.085
156.090	154.830

The Kansas city list that I have also includes frequencies for the following towns: Independence, Raytown, Belton, Lee's Summit, North Kansas, Riverside, Gladstone, Blue Springs, Grandview, Sugar Creek, Unity Village, Parkville, and Raymore.

To receive the list, send an SASE (#10 envelope), to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. The offer is only good for one month. Requests that are postmarked after August 31 should include \$2.00 dollars to cover copying and handling fees.

NEW COMMUNICATIONS GEAR

Covering DC to Daylight at Discount Prices!

AR-1000 Scanner	\$ 375
AR-2500 Scanner	\$ 455
Kenwood R-5000	\$ 850
AR-3000 Scanner	\$ 890
Japan Radio NRD-535	CALL
ICOM R-71A HF Scanning Receiver	\$ 850
Collins R390A (Reconditioned/Calibrated)	CALL
Japan Radio NRD-525	\$1125
SONY ICF-2010	\$ 349
SONY ICF-7600	\$ 220
SONY Pro-80	\$ 370
RACAL RA-6790 (GM)/R-2174	CALL
Bearcat BC-760XLT - w/Cellular Restoration	\$ 275
Bearcat BC-200XLT - w/Cellular Restoration	\$ 275

FREE DELIVERY

WE OFFER REPAIR SERVICE * MANUALS * BROKERING
PROFESSIONAL MONITORING STATION
SEND \$2.00 FOR CATALOG CREDITED TO PURCHASE



MIL-SPEC COMMUNICATIONS

P.O. Box 461, Wakefield, R.I. 02880
Call Today (401) 783-7106



Scanner buffs that live in **Houston, Texas**, can monitor Space Shuttle missions on 146.64 MHz. A local Ham Radio club provides the service for anyone who wants to listen in. The following Houston frequencies are from an anonymous contributor.

Houston, Texas

165.235	US Customs	415.200	GSA
165.285	ATF agents	450.55	Metro traffic reptng
165.375	Secret Serv	453.00	Houston Chronicle/Newspr
410.200	Post Office	463.675	Rice University

Our next invitation comes from Doug Guyer. Doug lives in **Elmira, New York**, and here are his favorite frequencies.

154.665	NY State Police (all cars)
154.695	" " (barracks to car)
154.77	" " (car to base)
155.37	" " (intersystem)
453.25	Schuyler Sheriff
460.15	Southport prison
460.35	Southport prison

Our final stop is in **Lanham, Maryland**. According to Alex Segarra, the city of Lanham is an ideal location to monitor the following frequencies:

154.010	Ambulance	54.235	Washington DC fire
154.130	Fire/rescue	155.108	Animal Control
154.160	Fire/rescue	462.675	Security company
	(main dispatch)	464.8250	Landover mall security
154.1900	Washington DC fire		

To invite the Frequency Exchange to your town, mail your favorite frequencies to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. For a personal reply, be sure to include an SASE.

Scanning Football

A reader from Honolulu, Hawaii, wrote in to ask if anyone has ever monitored the sideline conversations of football teams. The reader, Dick Hedlund, is specifically talking about the self contained, parabolic transmitters that can often be seen on the sidelines. Dick says that he's asked several coaches to give him a tape of the transmissions, but the coaches said, "No way!"

How about it gang? Does anyone know the frequencies? If so, send them in.

New Cordless Phone Band

A large number of you have been asking about the new 800 megahertz cordless bands. When the first letter came in, I thought that the writer was confusing cordless phones with cellular car phones. However, when the requests continued, I started to investigate.

I discovered that some cordless phones operate between the frequencies of 902.00 and 928.00 megahertz. However, it's nothing like monitoring the regular cordless frequencies between 46.610 and 50.0 Megahertz. The 900 megahertz band is also occupied by a bunch of "gadgets" that transmit a large array of beeps, whirls and whistles. Here are a few examples: heart monitors, imaging machines; aircraft radar, ham radio, and microwave ovens!

Scanner Buffs Assist Police

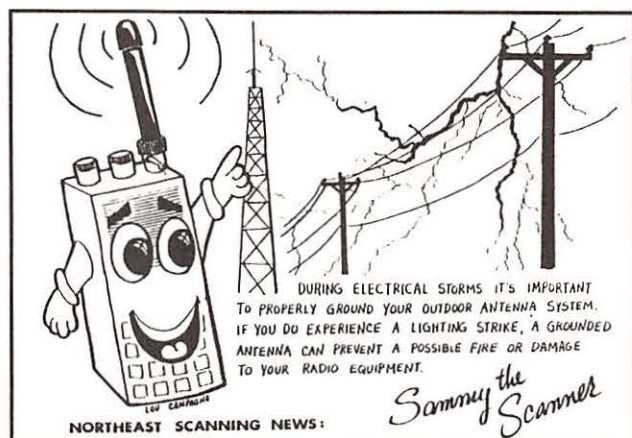
Scanner listeners in Mansfield, Ohio, helped the local police to capture two prison escapees. When the two men were spotted in Mansfield, local residents turned on their scanners and began to report the location of the escapees.

The men were finally captured after an elderly scanner buff called the police to report that she heard dogs barking. The authorities found the men hiding next to a garbage container.

A spokesman for the Mansfield Police Department said, "Without the help of local scanner buffs, we wouldn't have been able to capture the men so quickly." (News clipping from Jim Walters)

Attention, Fire Buffs

Scanning and serving the public seem to go hand in hand. As many of you know, a good number of *MT*'s readers are firemen and policemen.



If you're a fireman, I've got a question for you: Name the city where the first electric fire alarm was installed. If you want an additional challenge, here's another: Provide the date and the time of the first electric alarm.

Send your answers to the Scanning Report, P.O. Box 98, Brasstown, NC 28902. If you include an SASE with your response, I'll send you the correct answer.

No Code Ticket

The FCC has recently passed a new "codeless" ham license. The no-code requirement allows you to obtain a ham radio license without the hassle of learning Morse code. Sure, I know what you're thinking: "I'm a scanner buff, and I'm certainly not interested in ham radio." But did you realize that a ham license could rescue your hobby of scanning from a ticklish situation?

As we all know, some states have restrictive scanning laws that prevent us from placing scanner radios in vehicles. However, the majority of these laws make exception to radios used by ham radio operators. If you have a ham license and a scanner radio in your car, the assumption is that you were monitoring your local ham club's repeater frequency. Get the idea?

Although the code requirement was dropped, you'll still need to pass a written test. The test contains multiple choice questions, that are not that difficult to answer. Best of all, the questions are randomly drawn from a larger group that you can review and study.

Need more information? Contact your local ham club or write to the American Radio Relay League, 225 Main Street, Newington, CT 06111.

Scanning & CB

Scanning and CB radios have been together for years. In the early seventies, most CB radio operators were also scanner buffs. And while the CB craze has passed, many of you are still actively involved. One of the most commonly asked questions concerns the output power of a CB radio.

The average CB set will transmit approximately 2-1/2 watts, and it will modulate at 40 percent. If you want 4 watts at 100 percent modulation, simply take the set to a radio or TV repair center, and ask them to "peak" the transmitter to its legal power level. The cost for this service should fall between \$20.00 and \$30.00 dollars.

Is this practice legal? Yes. Manufacturers are afraid to "peak" their radios in fear that the FCC might pull one of the store shelf and find that it exceeds federal specifications.

Wrap Up

Okay guys, that's it for this month. If you have any questions or comments, don't hesitate to write. An SASE will guarantee a response. See you in September.



Scanning Test

Can you become a Scanning Communications Expert? There's only one way to find out—take the test. There are three skill levels; Novice, Specialist, and Scanning Communications Expert. You can take all three tests, or you can skip directly to the expert level.

The price of each individual test is \$10.00 dollars. If you want to skip the first two levels, the Expert exam can be taken for \$30.00 dollars. Send your check to [Desired level of test], P.O. Box 695, Honey Brook, PA 19344. Hope to see you at the top!



"The Largest Dealer of Scanners in the World"

SCANNER WORLD, USA®

10 New Scotland Ave., Albany, NY 12208 • 518/436-9606

**SCANNER WORLD EXCLUSIVE
UNIDEN BEARCAT
BC205XLT**

\$259.99 (\$7.00 shipping)

Digital programmable 200 channel hand held scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHz. Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna carry case are all included. Size is 2-11/16" Wx1-3/8" Dx7-1/2" high. (Optional extended 2 yr. warranty \$29.99, 3 yr. extended warranty \$39.99.) (* Excludes Cellular)

#CC-008 Heavy Duty Leather Carry Case... \$27.99

**RADIO SCANNERS
AND ACCESSORIES**

Bearcat BC145XL	\$99.99	(7.00)
Bearcat BC140	94.99	(7.00)
Bearcat BC172XL	139.99	(7.00)
Bearcat BC55XLT	119.99	(7.00)
Bearcat BC800XLT	249.99	(7.00)
Bearcat BC100XLT	189.99	(7.00)
Bearcat BP205/200	34.99	(*)
Bearcat BC210XLT	189.99	(7.00)
Bearcat BC-ONE	129.99	(7.00)
Bearcat AD-100U	14.99	(*)
Bearcat PS-001	12.99	(*)
Bearcat VC-001	12.99	(*)
Bearcat AD-140U	14.99	(*)
Bearcat AT-054	12.99	(*)
President HR2600	219.99	(6.00)
Regency R3020	96.99	(7.00)
Bearcat BC-310A	85.99	(7.00)
Bearcat BC-330A	109.99	(7.00)
Regency MA-917	24.99	(*)
Regency MA-501	14.99	(*)
LifeGard 4	109.99	(4.00)
GRE9001	89.99	(5.00)
GRE8002	79.99	(4.00)
Midland CB Radios	In Stock	
Cobra CB Radios	In Stock	
Uniden CB Radios	In Stock	
Silver Eagle Microphone	69.99	(*)
Antennas	In Stock	
Rechargeable Batteries	In Stock	

BOOKS

Covert Intelligence	8.95	(*)
Air Scan Directory	14.99	(*)
Betty Bearcat (Special)	4.00	(*)
Top Secret (7th)	15.99	(*)
Covert Techniques	9.95	(*)
Tomcat's Big CB	13.95	(*)
World Radio	18.99	(*)
Monitor America	5.99	(*)
Survival Directory	6.95	(*)
Rail Scan	7.95	(*)
Police Call	7.49	(*)
Scanner Modification Handbook	17.99	(*)

**TWO-WAY RADIOS
REGENCY-RELM**

UC102	109.99	(6.00)
UC102	(2 or more) 99.99	(6.00)
RH-256NB	339.99	(9.00)
RH-606B	469.99	(9.00)
WHS-1	399.99	(9.00)
UC-202	134.99	(6.00)

**REGENCY TS-1
35 CHANNELS — MOBILE/BASE**

**Special
\$138.99** (\$7.00 shipping)

Features include simple programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz. Turboscan, digital display, priority, search, lockout, delay, dim control, top mounted speaker, one year factory warranty. Includes AC & DC cords, mobile mounting bracket, telescope antenna. All for only \$138.99 plus \$7.00 shipping. (Optional extended warranty: 3 years \$39.99; 2 years \$29.99.)

**UNIDEN BEARCAT
BC-400XLT**

\$99.99

(\$7.00 shipping)
Our best selling mobile scanner, 16 channel, AC/DC, programmable, digital, AC/DC cords, telescopic antenna, mobile mounting bracket, weather search, priority, 29.54 MHz, 136-174 MHz, 406-512 MHz, external speaker and antenna jack.

REGENCY R-4020

**100 Channel Digital
Programmable
Hand-Held Scanner**

\$174.99

(\$7.00 shipping)

Our best price ever on a full featured complete package hand-held scanner. Manufactured by Uniden, this is the exact duplicate of the Bearcat 100XLT for a much lower price. Features include 11 bands of weather, aircraft, public service, trains, marine, plus more (29-54 MHz, 118-174 MHz, 406-512 MHz), 10 channel banks, 10 priority channels, lighted LCD display, earphone jack, channel lockout, AC/DC operation, scans 15 channels per second, track tuning. Special package deal includes following accessories: AC adapter/charger, rechargeable Ni-Cad battery pack, flexible rubber antenna, carry case.

SANGEAN ATS-803A

**SHORT WAVE
RECEIVER
\$168.99**

(\$7.00 shipping)

AM/FM/LW and 12 shortwave bands plus FM stereo, BFO for SSB reception, clock radio. Includes AC adapter, telescopic antenna, stereo headphones, and shoulder strap.

—SHORT WAVE WORLD BAND RECEIVERS AVAILABLE—

Grundig Satellit 500	\$548.99	(10.00)
Grundig Yacht Boy 220	106.99	(5.00)
Grundig Cosmopolit	198.99	(7.00)
Grundig Yacht Boy 230	149.99	(5.00)
Grundig Satellit 650	899.99	(20.00)
World Radio & TV Handbook (1991)	18.99	(*)

**SPECIAL!!
LOWEST PRICE EVER FOR A
PROGRAMMABLE SCANNER**

Cobra

SR-901

AVAILABLE ONLY
FROM SCANNER
WORLD

ONLY! \$74.99 Each

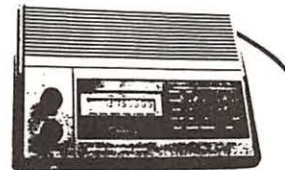
(Plus \$6.00 Shipping Each)

\$69.99 (2 or more)

Features include: 10 programmable channels, one touch memory programming, external speaker jack, 29-54 MHz, 136-174 MHz, 400-512 MHz, squelch, lockout, full frequency digital readout, AC or DC operation, retains memory up to 3 days without power, scan button. Includes AC adapter, telescopic antenna, and complete operating instructions. Size: 7 1/4" W x 2" H x 7 1/4" D. One year factory warranty. (Optional mobile cigarette lighter cord #901MPC \$4.99.)

Regency R3020

\$96.99 (\$7.00 Shipping)



20 channel digital programmable scanner, frequency coverage 29-54 MHz, 108-136 MHz aircraft, 136-174 MHz, 406-512 MHz. Features: weather key, search, lockout, priority, squelch, AC only, delay button. Size 9 1/2" x 2 3/4" x 7".

**UNIDEN BEARCAT
BC-600XLT**

\$199.99

(\$7.00 shipping)



BC 600XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz. Features compact size of 6-5/16" Wx1-5/8" Hx7-3/8" D, scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search, direct channel access, track tuning, service search including preprogrammed frequencies by pushing a single button for police fire/emergency, aircraft, weather, and marine services plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only \$24.99 plus a CTCSS tone board is available for only \$59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #600MPC \$4.99.

BEARCAT BC-950XLT

Same features as BC-600XLT but also receives 800-954 MHz. (Excludes cellular)

\$249.99 (\$7.00 shipping)

**REGENCY
R-4010
\$106.99**

(\$7.00 shipping each)

10 channel hand-held scanner. (Same Scanner as Bearcat 55XLT). 29-54 MHz, 136-174 MHz, 406-512 MHz, digital programmable, keyboard lock switch, lockout, includes rubber flex antenna. (Optional accessory SWV-41, only \$19.99 includes rechargeable Ni-Cad batteries, AC adapter/charger and cigarette lighter cord.)

★ **SCANNER WORLD HAS BEEN
SELLING SCANNERS FOR
OVER 21 YEARS**

★ **ALL MERCHANDISE NEW, IN
FACTORY SEALED CARTONS**

★ **COMPLETE CATALOG
PUBLISHED 4 TIMES PER
YEAR. FREE UPON REQUEST.**

**BEARCAT 70XLT
20 CHANNEL DIGITAL
HAND-HELD SCANNER**

\$129.99

SPECIAL
PACKAGE DEAL
ONLY

(\$7.00 Shipping)

Small size 6" Hx1"Dx2 3/4"W. Full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54 MHz, 136-174 MHz, 406-512 MHz. Package includes rubber antenna, rechargeable Ni-Cad battery pack. AC adapter/charger and vinyl carry-case.

Optional Cigarette Lighter Cord #UA502... \$12.99
Heavy-Duty Leather Carry Case #CC002... \$22.99

**BEARCAT BC-147XLT
16 CHANNEL BASE SCANNER**

\$99.99

(\$7.00 Shipping)

Programmable, digital, AC/DC operation. Frequency coverage 29-54 MHz, 136-174 MHz, 406-512 MHz. Weather button, priority, lockout button, squelch includes AC adapter, telescopic antenna.

REGENCY R-2066

\$99.99

(\$7.00 shipping)



Digital programmable, 60 channels, AC base scanner, 30-50 MHz, 144-174 MHz, 406-512 MHz. Size 7 1/2" x 3" x 9". Turbo-Scan scans 40 channels per second, 4 channel banks, weather alert, search, priority, lockout, AC cord, telescopic antenna, plus much more.

EXTENDED WARRANTY SERVICE

This extended service contract is for all scanners, CB radios, radar detectors, and cordless telephones that have been purchased anywhere in the USA in the past 30 days. This extended warranty service begins when your original manufacturer's warranty expires.

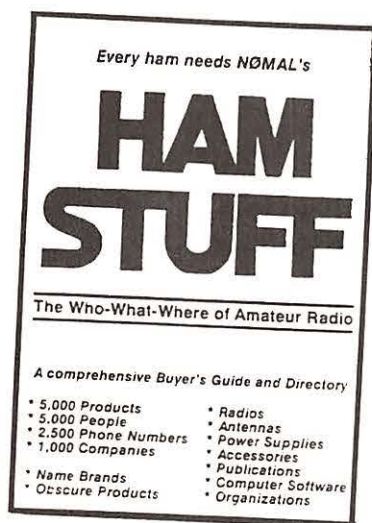
1 year extended warranty... only \$18.99
2 year extended warranty... only \$29.99
3 year extended warranty... only \$39.99

ORDERING INFORMATION: Call (518) 436-9606 to place orders or mail orders to Scanner World, USA®, 10 New Scotland Ave., Albany, N.Y. 12208. Orders will be shipped within 24 hours by United Parcel Service if order is accompanied by MasterCard, Visa, cashier's check, money order. COD (COD shipped by United Parcel Service will be cash or money order only). (If a COD package is refused, customer will be billed for shipping and COD charges.) Mail orders with personal or business checks enclosed will be held 4 weeks for bank clearance. Prices, specifications, and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. Scanner World® warehouse in Albany, N.Y. We are not responsible for typographical errors. All merchandise carries full manufacturer's warranty. Bid proposals and purchase orders accepted from government agencies only. Free full line catalog mailed 4 times per year. Merchandise delivered in New York State add 7% sales tax. No returns accepted after 7 days of merchandise receipt. * Add (\$ per item, and \$3.00* for all accessories ordered at same time. COD orders will be charged an additional \$4.00 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service to street address only. (No P.O. Box). Shipping charges are for continental USA only. All others ask for quote on shipping charge.

Scanner World, USA® • 10 New Scotland Ave., Albany, NY 12208 • 518/436-9606

what's new?

Larry Miller



Ham Stuff

Wow! *Ham Stuff* is a telephone-size book that calls itself "The Who-What-Where of Amateur Radio." Compiled and edited by Walt Garrett, NOMAL, *Ham Stuff* includes some "5,000 products, 5,000 people, 2,500 phone numbers, and 1,000 companies" that deal with everything from radios to antennas to computer software. It is impossible to even begin to describe all that is contained in the book's 400 pages.

The book is divided into three main parts: "Stuff to Do," "Stuff to Buy" and "The HamStuff Directory."

There are names and addresses for public service organizations like the Civil Air

Patrol, ideas for young hams, license preparation services and material, information resources, publications, radios and accessories, amps and preamps, antennas, computer systems, station accessories, electronic parts, services and more.

Ham Stuff is a great book — an absolute necessity for anyone who wants to get a handle on the Who-what-where of hobby radio. You can get your copy for \$19.95 plus \$3.00 shipping and handling from G.A.I. Systems Press, P.O. Box 5832, St. Louis, MO 63134. Tell them *Monitoring Times* sent you.



Scanner Repairs

G & G Communications is a unique sort of business. It's the kind of place that is like an old-time radio shop. If you've got a scanner that needs repair, they'll get it back on its feet.

Prices are reasonable and

fixed. Programmable scanners are \$30.00 plus parts and shipping; crystal scanners \$25.00 plus parts and shipping. All work is guaranteed for 90 days.

G & G Communications also buys and sells used scanners. It has a smallish list but the selection is interesting and affordable.

If you're a do-it-yourselfer, you'll also want to keep G & G in mind when you need parts. That's where scanners go when they die. (Make sure your scanner fills out and signs a parts donor card. Then keep it with the owner's manual!)

For more information about G & G Communications or to get a copy of their latest price list, write 9247 Glenwood Drive, Le Roy, NY 14482 or call 716-768-8151.

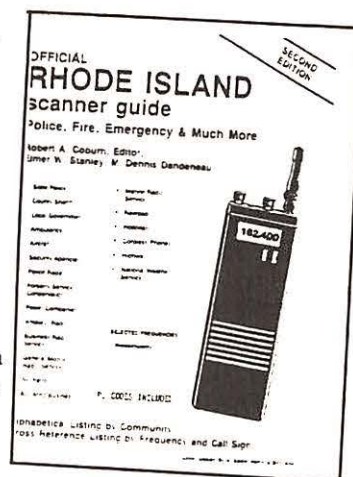
BBC Backgrounder

If you heard an item in the news about the "althing" of Iceland or the "Zhongnanhai" of China, would you know what the announcer was talking about?

The new *BBC World Service Glossary* provides definitions for over 7,000 current affairs terms, and covers — as you would expect from the Beeb — every country in the world.

So the next time that you hear mention of "Camp Greentop," you'll know that it is the separate area for press access to Camp David, the presidential retreat in Maryland.

You can order your copy by writing Promotion Department, Loongman Group UK Ltd, Westgate House, Freepost, Harlow, Essex, CM20 1YQ. Or call 011-0279-442601. You'll be sent a pro forma invoice in U.S. dollars.



Rhode Island Scanner Guide

A company that can be counted on to produce consistently excellent frequency directories is Bob Coburn's *Official Scanner Guides*. Yet another "Official" guide is out — this time for 1,045 square mile Rhode Island.

The Official Rhode Island Scanner Guide contains frequency information for state police, county sheriff, local government, ambulance, aircraft, security agencies, forestry, power companies, business radio, ski patrols, marine, railroads, hospitals, highway and more — in short, just about everything that emits a radio wave capable of being picked up on a scanner.

Frequencies are listed by location, then service (police, fire, etc.) and each is followed by helpful comments. A second section is in a by-frequency listing. There is also a short list of nearby Massachusetts frequencies.

Official Rhode Island Scanner Guide is a must-have for anyone interested in monitoring this censity-weensy state. To get the *Guide* send \$17.95 plus 3.05 UPS shipping to P.O. Box 712, Londonderry, New Hampshire 03053.

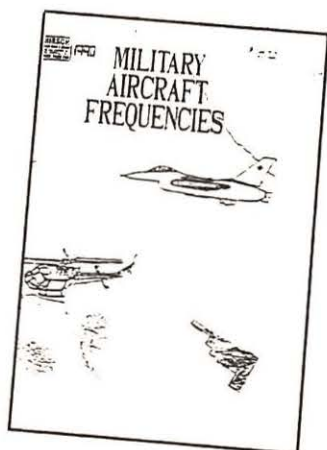
Carolina Frequency Lists

For over 9 years now, Wilmington [North Carolina] scanner radio enthusiasts and law enforcement agencies have been privy to Mark Samwicks Definitive Scanner Frequency Listing for the Cape Fear Area."

So goes the FAX announcing the availability of computer-generated frequency listings for Fayetteville (NC), Jacksonville (NC), Kinston/Goldsboro/Greenville (NC), Lumberton/Whiteville (NC), Myrtle Beach/Georgetown (SC), New Bern/Morehead City (NC), Raleigh/Durham/Chapel Hill (NC), and Wilmington (NC).

Although no sample accompanied the announcement, the author promises that lists are "updated almost weekly...custom-printed and personalized on the day [your] order is received." Lists are provided in frequency order only for \$7.00 each.

For more information, contact Mark Samwick Jr., P.O. Box 2593, Wilmington, NC 28402.



1990 Military Aircraft Frequencies

It's always exciting to see new publications get under way. Though some are more sophisticated than others, they can often be oddly appealing and sometimes even provide information missed by their slicker cousins.

1990 Military Aircraft Frequencies is a real grass roots sort of book. Produced on a dot matrix printer and bound in yellow construction paper decorated with doodlings of aircraft and helicopters, it is obviously a personal labor of love.

There is a disjointed introduction of sorts that ends with an invitation by the author (who identifies himself only as M.P.H.) to "come to the top of the sledding hill at Chestnut Ridge Park, Orchard Park, NY, every Sunday from 10am-4pm. Bring a lunch, lawnchair, and your battery-powered aircraft scanner."

There are also three pages of frequencies, but the bulk of the book is copies of someone's hand-written log sheets. Printing is on one side of the page only and corrections are overwritten into the text.

If you enjoy prospecting for gold, you know that it's a gamble. You may find some gold in *Military Aircraft Frequencies*; maybe not. The book is \$9.95 but we do not know if that includes shipping or not. For more information, contact Hirsch 2-Way Sales and Service, 219 California Dr., Williamsville, NY, 14221 or call 716-632-1189.

GUIDE TO FACSIMILE STATIONS

11th edition • 408 pages • \$ 33 or DM 50

The recording of FAX stations on LW and SW and the reception of meteorological satellites are fascinating fields of radio monitoring. State-of-the-art hardware and software connects a radio receiver directly to a laser printer. The result is press photos, satellite pictures and weather charts in top quality.

The new edition of our FAX GUIDE contains not only the usual up-to-date frequency lists and transmission schedules, including those of all US Air Force, US Coast Guard and US Navy stations worldwide. It informs you particularly about new FAX converters and programs on the market, and includes the most comprehensive international survey of the "products" of weather satellites and FAX stations from all over the world. 312 sample charts and pictures were recorded in 1990 and 1991. Here are that special charts for aeronautical and maritime navigation, the agriculture and the military, barographic soundings, climatological analyses, and long-term forecasts, which are available nowhere else.

Additional chapters cover

- List of 341 frequencies monitored in 1990 and 1991.
- Exact schedules of 86 FAX stations on 313 frequencies.
- Geostationary and polar-orbiting meteorological satellites. Schedules of GMS (Japan), GOES-East and -West (USA), and METEOSAT (Europe).
- Technique of FAX transmission. International regulations.
- Lists of abbreviations, addresses, and call signs. Test charts.

Further publications available are *Guide to Utility Stations* (9th ed.), *Air and Meteorological Code Manual and Radioteletype Code Manual* (11th ed.). We have published our international radio books for 22 years. They are in daily use at equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecommunication administrations worldwide. Please ask for our free catalogue, including recommendations from all over the world. All manuals are published in the handy 17 x 24 cm format, and of course written in English.

Do you want to get the **total information** immediately? For the special price of \$ 160 / DM 235 (you save \$ 27 / DM 40) you will receive all our manuals and supplements (altogether more than 1600 pages!) plus our *Cassette Tape Recording of Modulation Types*.

Our prices include airmail postage to anywhere in the world. Payment can be by \$ or DM cheque or cash. Dealer inquiries welcome - discount rates and pro forma invoices on request. Please mail your order to ☺

Klingenfuss Publications
Hagenloer Str. 14
D-7400 Tuebingen
Germany
Tel. 01149 7071 62830

Protect Mobile Equipment

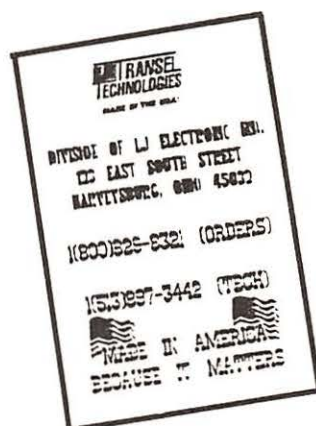
Radio Shack has introduced an automobile alarm system that prevents the vehicle from being started while the alarm is activated.

This in itself would be of little interest to radio hobbyists whose equipment-packed vehicles are often the target of a break in — not the auto itself. However, the Mobile Alert Remote Control Auto Alarm also features state-of-the-art security technology and a built-in motion sensor that detects vibration caused by an attempted break-in.

A remote radio transmitter, which you can hang on your keychain, can arm or disarm the vehicle from approximately 20 feet.

The Radio Shack Mobile Alert Remote Control Auto Alarm retails for \$89.95 and can be

found at any of the over 7,000 Radio Shack stores nationwide.



Free Antenna Catalogue

Transel Technologies is an Ohio-based firm specializing in

in antennas. Their catalogue boasts a wide variety for mobile, base and hand-held use. There are antennas for virtually every usage from 27-31 MHz to 440-470 MHz to the cellular phone frequencies.

The company also carries a wide selection of connectors and other accessories. And prices are good — very good. Everything the company sells is "Made in America."

You can get a free copy of the Transel Technologies catalogue by writing to 123 E. South Street, Harveysburg, OH 45032.



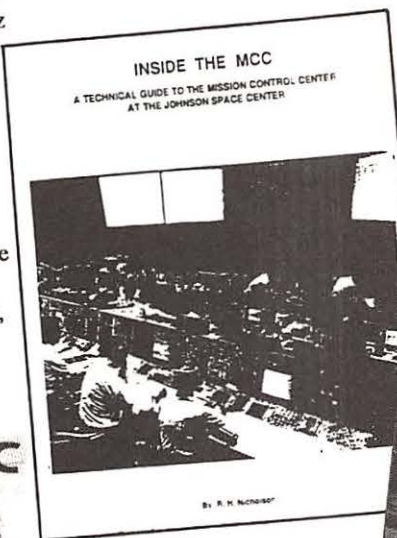
Riot Control, Anyone?

Shomer-Tec is a catalogue of Law Enforcement and Military Equipment, some of which you may need; others not. For example, you may or may not have use for Commando Smoke Grenades ("40,000 square feet of white gray smoke for 5.95 postpaid"), Handcuffs (just \$34.00 a pair, postpaid), or PIX-QUIK Lock-Pick Set (not available to the public for \$19.95 postpaid).

Still, it's the kind of catalogue that you'll enjoy browsing. And who knows. It never hurts to have a couple of smoke grenades around the house anyhow.

The catalogue is available for \$2.00 from Shomer-Tec, P.O. Box

2039, Bellingham, Washington 98227.



Inside M.C.C.

Inside the M.C.C.: A Technical Guide to the Mission Control Center at the Johnson Space Center is a formidable new book from Universal.

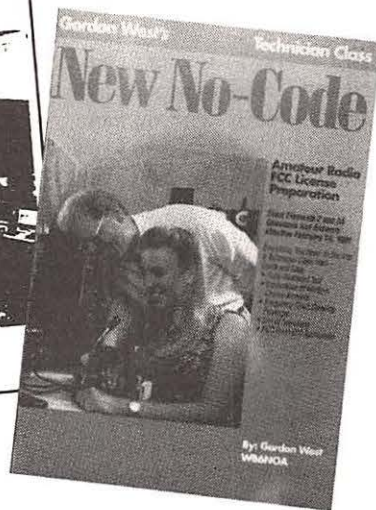
Written by R. H. Nicholson, it's billed as "your personal behind-the-scene tour." But don't expect any warm, fuzzy stories here.

Author Nicholson spent ten years with NASA as a Mission Control Center communications technician and technical writer and was intimately involved with the equipment and systems. This is a "get under the panels and examine the wiring" type of book that "will satisfy your technical curiosity."

The text contains an absolutely incredible barrage of facts that range from a history of the facility to topics like "Configuration Switching Equipment." Spend a few hours with this book and you'll "know the M.C.C. at the Johnson Space Center" as intimately as the author.

Inside the MCC is available for \$11.95 plus 1.00 shipping from Universal Radio, 1280 Aida

Drive, Reynoldsburg, Ohio 43068. Or order toll-free, 1-800-431-3939.



Another No-Code License Book

There's another new no-code ham radio license book. Called *Technician Class New No-Code*, the book lists all of the possible questions that are in the test, their multiple choice answers and then the correct answer. After that author Gordon West, "in his unique style tells the reader the right answer and explains in detail why the answer is correct."

Technician Class New No-Code is available wherever radios are sold. The price is \$9.95.

Wanna Trade?

Ham radio "swap" sheets have been around almost as long as ham radio itself. Amateur operators, seemingly in a constant

state of frenzy to keep up with technology, created the market for the publications.

Within the last few months, a number of new "swap" sheets have appeared on the scene, all of them focusing on the shortwave listener and scanner enthusiast or at least including them within their scope.

One of the most recent is the *SWL Swapper*, published every three weeks by a company named Brendales. The *SWL Swapper* is eight pages long and contains about three pages of ads, the rest of the publication being devoted to articles, including the publisher's early experiences with radio, his use of a baby monitor, the June/July Blue Angels/Thunderbirds airshow schedule and a little chat about the publication. In short, it's like the classified section of *Monitoring Times* plus some friendly chatter.

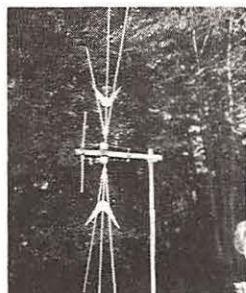
It's interesting to note that classified sections of monitoring-type publications have traditionally been lean. (See *Monitoring Times*, pp 102-103 this issue.) Those who theorize about such things seem to think that shortwave listeners simply don't chase technology like hams do.

However, any tendency for SWLs to be technological wall flowers should be offset by Brendale's incredibly aggressive promotional stance — ads placed in virtually every radio-related publication, a toll-free number, free samples, and free 50 word classifieds for new subscribers — assuring that if any of these publications survive, this will probably be one of them.

A subscription to Brendale's *SWL Swapper* is \$10.00 for one year — over half of which goes to pay for first class postage — from P.O. Box 1135, Pepperell, Massachusetts 01463-1135.

Review

Scantenna from Grove Enterprises



The Scantenna is small, lightweight, wide frequency responsive and reasonably priced! (mast not included)

With scanners now covering wider, more continuous ranges than ever before, older antenna designs just can't cut it. New techniques (actually, new implementations of old techniques) are being utilized in modern antenna manufacturing.

The new "Scantenna" from Grove Enterprises is an excellent example of this "new" technology. The Scantenna is really nothing more than a dipole cluster, popularized by the excellent (and still current) Channel Master Monitenna (model #5094).

As a matter of fact, the Scantenna appears to be an updated version of the 5094 with its spoke-like parasitic elements and general outline. This isn't a bad idea--the 5094 has stood its ground for years with a well-deserved reputation for wide-frequency-coverage performance.

So how well does the new Grove Scantenna actually perform? We decided to place one at the peak of our roof on the MT office building where a Grove Scanner Beam had formerly been operating for several months.

Test results:

We were astounded by the improvement over the Scanner Beam! It seems that, at our location at least, the directional effects of the beam were quite restrictive. While the directional antenna received well, it was in one primary direction.

Installation of the new Scantenna permitted reception from all directions, and signals were quite good from 40 MHz low band right through UHF. We have no local 800 MHz licensees, so we will have to take the manufacturer's word that it works well there, too.

This is not to say that the Scantenna should be purchased in preference to the Scanner Beam; the beam has higher gain and, when pointed by an inexpensive TV-type rotator, is extremely useful in favoring distant, weak signals. It is also smoother in frequency response over its wide bandwidth because of its log periodic design.

But for general purpose monitoring, we would be hard pressed to recommend another antenna over the new Scantenna. It is small, lightweight, wide frequency responsive and reasonably priced.

The only criticism that we could offer was that the gauge of the aluminum is quite light, about the same as TV antenna tubing. The user must be careful while extending the elements, but several brisk winds and some severe weather haven't bothered it a bit.

As with any receiving antenna, the impedance of the coaxial cable is of no importance; just be sure to get good quality cable. Radio Shack RF-6/U is now high quality, or you may wish to order the cable from Grove at the same time you order the antenna. They keep it in stock in 50 or 100 foot lengths (catalog numbers CB50 and CB100, respectively) with the connectors of your choice.

Grove ANT7 Scantenna, \$39.95 plus \$4 UPS shipping from Grove Enterprises, PO Box 98, Brasstown, NC 28902; phone orders toll free 800-438-8155.

SCORPIO

ID[Sta]:GKY6 (PORTISHEAD RADIO) Location: England
Date:02-27-91 Begin Prg:03:17:35 End Prg: Freq:17.220.00
Mode:FSK Signal: Agg/Svc:Coastal (sea) QSL:
Remarks:SITOR traffic -<arg>-
Data:23 / > / 17.220.00 FSK / Signal() #2082
[Radio] [PSE] [CLS] Terminal Mode [CHG] [CLD] [Sr/F] [Qu/eX]
LogScan Log of John Doe [T.J.]

CMD:AL
MODE NOW ALIST
.. THIS IS AN AUTO TELEX MESSAGE SYSTEM
TRAFFIC FOR THE FOLLOWING VESSELS:
USS FREDRICKS
HMS UINC...

GA+?

<arg FILE LOADED>

1 Manual 2 Func1 3 Func2 4 Func3 5 Upload 6 TimeON 7 TimeOFF 8 Clear 9 Log 10 Optins

Integrated Multi-Function Communications Software for IBM PCs

Simultaneous

Radio Control / Scanning

Log Database Management

TU Digital Control/Disp

- > LogScan, AutoLog and AutoTU functions > Interfaces with All Mode Terminal Units
- > Mouse/Function Key control of Kenwood & Icom Rcvrs & RS232 Digital Terminal Units
- > Search Log by any field including Remarks > Scan Receiver based on Log Search criteria
- > Copy RTTY & other DIGITAL signals > AutoTU sets TU mode as needed during scan
- > LogScan has real time UTC and FRQ limit options > AutoLog builds database from "hits"
- > Run other programs (DOS) within Scorpio > Includes "Top 100" HF database & Manual

Optional Log Databases available for only \$19.95 each include:

English Language SW Broadcast - MidEast - Utility - Others



\$89.95 (+ S&H)

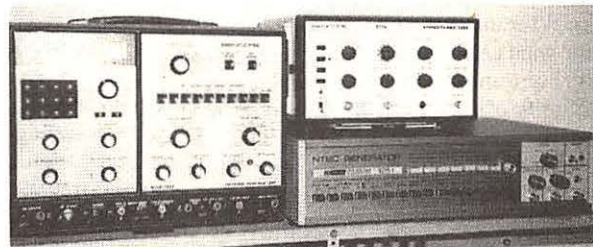


ash-ton

PO Box 830 - Dandridge, TN 37725 - (615-397-0742)
Fax: (615) 397-0466 Compuserve # 72557,3560

TV Test Equipment

Excellent Condition, Only One Each!



Sencore VA62 (left) video analyzer with manuals; cost \$3495, sell \$1495

Sencore ST66 (top right) stereo TV analyzer with manuals; cost \$1395, sell \$595

B&K Precision 1251 (bottom right) NTSC generator with manual; cost \$1195, sell \$395

Send check or money order to:

Grove Enterprises

P.O. Box 98

Brasstown, NC 28902

call in VISA/MASTERCARD or COD order to 704-837-9200.

DXing During Storm Season

I dunno. Maybe it's because I was born in Florida. It might have something to do with being born in late August. I just can't fully explain the feelings I get at this time of year. The restlessness. The uncontrollable urge to put plywood and masking tape over all my windows. My loving spouse is constantly apologizing to our neighbors for my strapping pontoons onto their cars.

Uh...Uncle Skip. You're losing it!

A thousand pardons, Boss! I just get a little more freaky than usual during *Hurricane Season*. Actually, while I drop into raw survival mode during this time of year, many DXers are enjoying some of the most exciting listening to be had on the shortwave bands. So, just for your sake, I swallowed my fear and placed a call to Larry Van Horn and brought myself up to date on this great DX challenge.

Storm tracking makes for a great way for a beginner to get their feet wet in the "utility listening" world. It will also provide some of the most memorable listening of any monitor's career. Break out the Mackintosh and the Wellies Reggie; it's time to take a good hard look at...

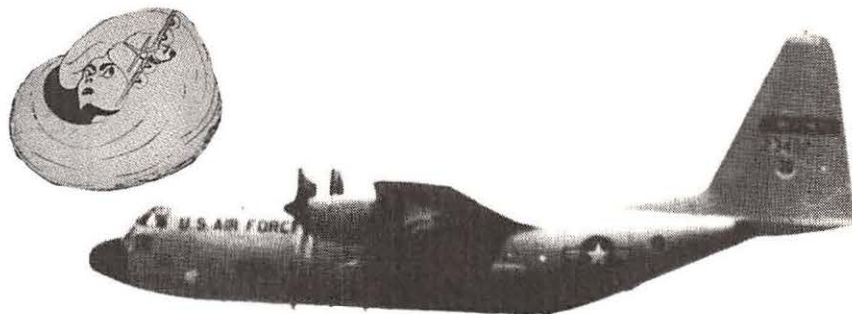
UNCLE SKIP'S GUIDE TO HURRICANE CHASING

The New Columbia Encyclopedia describes a hurricane as a tropical cyclone in which winds attain speeds greater than 121 km per hour (that's around 75 miles per hour for all you non-metric types). What this definition does not indicate is that the wind energy of the average size, garden variety hurricane is equal in overall intensity to the explosion of half a dozen 20 megaton hydrogen bombs!

Hurricanes are capable of billions of dollars in property damage and countless thousands of deaths. The track of a hurricane can cover thousands of kilometers. All this danger and destruction over such a wide area makes for prime use of the shortwave spectrum in terms of storm tracking and emergency management. With a little planing and a handful of frequencies you will be able to keep track of one of Mother Nature's ultimate power trips.

When to Start Listening

Every year between the months of July and October, an average of 3.5 hurricanes develop somewhere over the Caribbean Sea or the Gulf of Mexico. Once these puppies get fully geared up they have a nasty habit of moving up along



WC-130 weather recon aircraft during hurricane mission shown with the USAF Hurricane Hunters logo.

the East Coast of the United States. On the way to becoming a full fledged hurricane, a storm will pass through two stages of development: Tropical Depression and Tropical Storm.

To get ready to monitor the action you must begin by paying close attention to some national weather broadcast information source or other. Newspapers, television and radio (including shortwave radio) will give you an idea of where these depressions and storms are forming up. If you want to use your monitoring skills to set the stage for your storm tracking, you can give a listen to 7880 kHz for the National Oceanic and Atmospheric Administration (NOAA) National Weather Service broadcasts.

You might also check any U.S. Coast Guard Marine Information Broadcasts. According to Larry Van Horn, the maritime portions of the shortwave bands are going through some juggling, so you will want to stay tuned to the "Utility World" and "High Seas" columns for up-to-the-minute frequency information.

If you also monitor VHF scanner frequencies you can get up to date NOAA weather information by scanning through 162.40 - 162.55. The information on these frequencies tends toward local area weather but often gives data on major storms. While you have the scanner turned on, you might want to check your local aircraft tower and weather information frequencies. These are often great sources of late breaking weather information as people try to fly in the direction of really bad weather.

By keeping your ear to these resources and keeping one eye on The Weather Channel (if your area cable TV company carries it) you will be able to fire up for serious listening if a tropical depression or tropical storm cranks up the volume.

What to Listen For

Okay, your weather forecasting resources just let on that a real live hurricane is cooking

out in the Caribbean and headed for the East Coast. Where are you going to tune to get in on the action? Bunkey you are about to have some real radio excitement!

A classic place to start is to track the *HURRICANE HUNTERS*. Remember how I said the winds of a hurricane can be measured on the same scale as nuclear explosions? Well, who actually goes out there and does this kind of crazy work? The folks over at NOAA have a couple of modified Navy P-3 Orion reconnaissance aircraft (designated WP-3; I expect the W stands for Weather). Air crews and accompanying scientists hop on board these planes and, you guessed it, fly them right into the hurricane! Some fun, hey kids?

If you want to listen to these folks routinely do what seems impossible listen to 3407, 5562, 6673, 8876, 10015, 13354, 17901 and 21937 kHz (USB). These aircraft will be communicating with a ground station known as Miami Monitor, callsign KJY74. The aircraft will fly under designators NOAA41 and NOAA42. If you hear these calls, you know you are riding along with some of the bravest people around.

Another group of Hurricane Hunters, The U.S. Air Force, has a squadron of weather reconnaissance aircraft that do the same type of work as the NOAA folks. They are a little harder to get a handle on because they will first come up on a standard USAF GCCS (Global Communications and Control System) frequency and then they will be moved off to another discrete frequency by the net manager. If you hear the callsign "GULL" when you are tuning across the military air bands, you are on board one of USAF's modified C-130 Hercules aircraft (designated WC-130; there's that "W" again). You might try to monitor MacDill AFB, Florida, on 4746, 6750, 8993, 11246, 13244 and 18019 kHz (USB) for "Gull" activity.

While tracking the aircraft can be a lot of fun, your storm tracking will, by no means, be limited to these weather daredevils. Several other

frequencies will give you additional excitement, especially after the hurricane actually hits the shore and starts to wreak havoc.

The Federal Emergency Management System (FEMA) was set up as a shortwave communications network to provide communications after "The Big One" was dropped. While waiting for nuclear war, this agency will lend a hand in establishing communications during natural disasters. The primary daytime frequency is 10493 kHz (USB) and 5211 kHz (USB) evenings. All the FEMA station callsigns begin with WGY followed by three numbers (eg. WGY900).

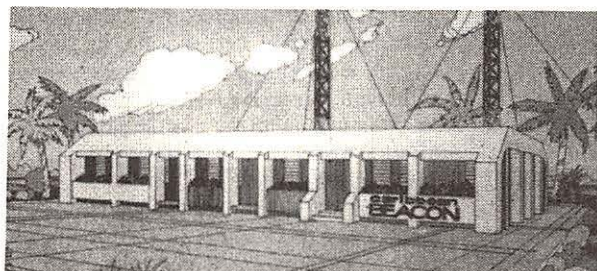
In a hurricane, you will most likely hear WGY900 FEMA HQ, Washington D.C., communicating with Region IV Net Control Station WGY904 in Thomasville, GA. Pay attention to traffic out of WGY974 Tallahassee, FL, WGT934 Columbia, SC, and WGT984 Raleigh, NC, as the storm moves up the coastline. If the storm develops in the Gulf of Mexico you can expect to hear activity out of WGY946 Baton Rouge, LA.

The Amateur Radio Service is always ready to assist in establishing emergency communications when a disaster strikes. Ham nets are often the only resource for finding out if Old Aunt Mildred, who retired to Key West, is okay after the big blow has passed. During disasters, amateur radio operators energize three emergency preparedness systems. The Amateur Radio Emergency Service (ARES), the National Traffic System (NTS) and the Radio Amateur Emergency Service (RACES).

Hams train for emergency communications through regularly scheduled local and national nets that can be heard throughout the ham bands. In the event of a serious storm and its related devastation, you will hear highly organized amateur radio traffic occurring in many locations on the various amateur radio frequency bands. These operations will go on throughout the storm and for as long as necessary afterwards until normal communications systems are back in operation.

Listening on the Broadcast Band

Some years ago, our government fired up a Spanish language station aimed at Cuba called



Stations like the Caribbean Beacon can provide important information during tropical storms.

Radio Marti 1180 kHz. This bothered the powers that be in Cuba so much that they kicked up the power on many of the standard AM broadcast band transmitters. The resulting interference made it necessary for many AM stations in Florida to juggle both power and antenna patterns to get around this RF cold war.

The high side of this problem is that a few AM stations down in Florida put out a signal hefty enough to be heard well up the Eastern Seaboard most evenings. In a hurricane monitoring situation, you might want to try to listen for a few of the higher powered AM stations located in the southeast portion of the USA. Florida stations with the best potential to be heard include WGTO 540 kHz Cypress Gardens, WIOD 610 kHz Miami, WAQI 710 kHz Miami, WINZ 940 kHz Miami, and WVCG 1080 kHz Coral Gables. These will be hard catches but they do come through often enough to warrant a listen during disaster tracking.

You will have much easier listening if you monitor 50 kW WSB 750 kHz, Atlanta, GA, or WWL 870 kHz New Orleans, LA. These two stations will be close enough to the action to carry on going storm reports.

When a hurricane hits, do not be surprised to hear AM stations you should not be able to hear under normal conditions. This is not due to any mystical magical propagation or atmospheric anomaly. During emergencies, a station can continue to broadcast at its full authorized power. Many stations normally reduce their power significantly during the evening to avoid interference. If they are smack dab in the middle of a disaster zone they may run full daytime power well into the night. This can be up to 50 kW depending on a station's license. If you hear something unusual like this during a storm, log it and most definitely send for verification because this is very rare and highly collectable.

Also on the standard AM broadcast band, you will find several Caribbean stations that might come through with interesting listening in a storm. One of the easiest to hear is The Caribbean Beacon 1610 kHz broadcasting with 50 kW from Anguilla. Since these storms brew up in the Caribbean regions, this station should be on your hurricane hit parade.

Tracking hurricanes is a great way to while away the summer DX doldrums. As you are tuning across the bands following all this wild weather and its all too common destruction, remember that there are people involved in this mess. As you listen in, you might want to send a few dollars to any of the many disaster relief organizations that help people out in such times of need. Think of it as the admission price to all of this great summer listening. Surf's Up! See you in September!



MONITORING TIMES

FCC NO-CODE AMATEUR RADIO LICENSE

The FCC recently passed Docket 90-55 which for the first time allows a new codeless entry ham radio license of technician grade. Privileges 30 MHz and above - ALL modes! (Send SASE for copy of R.E. article)

One ham magazine covers ALL the specialty modes! Feature Writer's and regular Column Editors help you along, educating and updating you on what's happening "on-the-bands". Start your subscription today & join in on the fun!

**FSTV SSTV FAX RTTY PACKET
AMTOR OSCAR FM REPEATERS
MICROWAVE AND LOTS MORE!**

SEND
\$20
CHECK
OR
MONEY
ORDER



OUR
24TH
YEAR
SINCE
1967!

The SPEC-COM Journal
P.O. Box 1002,
Dubuque, IA 52004
(319) 557-8791



MC/VISA (5% added)



GILFER — first in Shortwave

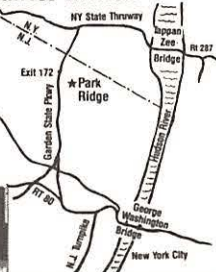
New 3rd Edition
**THE WORLD
IS YOURS**
by Sam Alcorn
only \$9.95



"Best book of its kind" — Pop. Comm. Beginner or avid SWLer, you will learn from this well written introduction to shortwave listening. What you'll hear band by band by time so you tune to what your interest is. Guides you through basic listening, setting up a listening post, receiver and antenna selection, collecting QSLs, easiest world time chart, DXing Tips, Computer use, hamming, glossary.

Dealer Inquiries Invited

VISIT GILFER'S STORE
Easy to find, accessible
from New York City.
Take Garden State Park-
way (NE portion of N.J.),
Exit 172. Gilfer is in the
center of Park Ridge,
opposite the Borough
Hall. Store hours:
M-F 10am-5pm,
Sat. 10am-3pm.



201/391-7887

GILFER SHORTWAVE
52 Park Ave. • Park Ridge, NJ 07656

Keyholes in Space

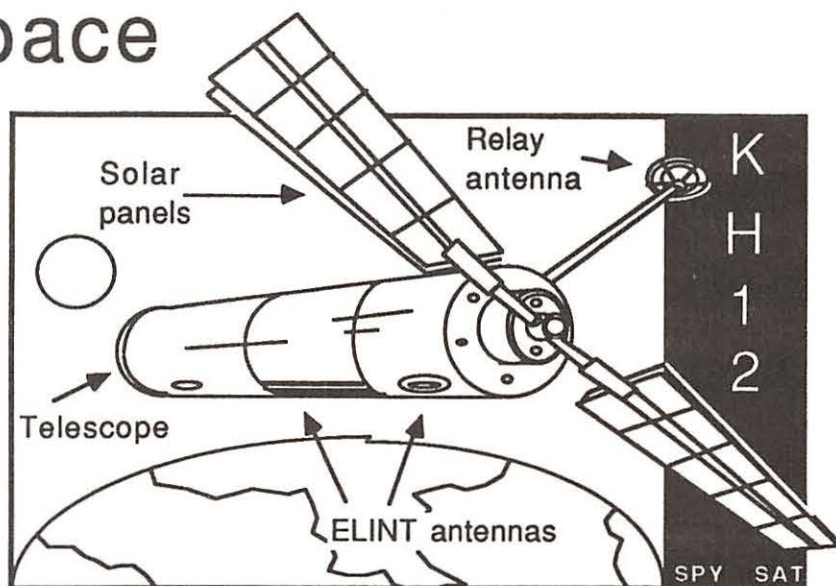
It hangs high above the Soviet airfield. They do not know it is there. Soviet Space Command reported the last known position on the spy satellite at a thousand miles away but it was boosted into this orbit just minutes ago. Unaware, the Soviets roll the top secret prototype out of its guarded hanger and onto the tarmac. It soon flies off on its first test flight.

The radio chatter and data transmitted from the Soviet test vehicle is intercepted by the hovering spy satellite and relayed to another one orbiting just a bit further east. Every communication emanating from the test facility is being monitored from the test flight communications to the low-powered walkie talkies used by security forces.

The many antennas and high tech communications receivers packed into the KH-12 (KEYHOLE) satellite scan all the radio bands from shortwave to microwave. Very little escapes its many ears.

Not only does the satellite have ears, it also has eyes. High resolution still and video cameras see all that goes on below. Not only can the KH-12 see the top secret Soviet test aircraft, its lenses are sharp enough to make out small details in its structure and even see the tiny cyrillic markings. Infra red cameras examine the engines and heat emissions from the aircraft, providing much needed data for examination by experts at the Pentagon.

All of this is relayed via satellite to United States intelligence agencies in almost real time (live with only a slight delay). Analysts go to work deciphering the secrets of the Soviets and preparing data for the Foreign Technology Division of the Air Force. Just another amazing eavesdropping device of the National Security



Monitoring Times Graphic

Agency's National Reconnaissance Office (NRO).

The super spy satellites of the NRO harvest a wealth of information for use by Uncle Sam and its armed forces. Much of the success of Desert Storm is due to the KH-11 and KH-12 orbiting "birds" of the NSA. Along with the Keyhole satellites, others known under various code names such as Vortex and Magnum collected important data such as communication modes and frequencies used by the Iraqi army, position and strengths of Iraqi forces and the locations of command and control centers.

The Big Blue Cube

Located in the high tech city of Sunnyvale, Calif., is the heart of the NRO's spy satellite network. A windowless nine-story, pale blue building, surrounded by a field of satellite dishes, the command center of the NRO's spy birds is known as the Big Blue Cube. Inside the cube are the headquarters of the Satellite Test Center and the Satellite Control Facility (SCF), which is linked to seven other earth stations that serve to control and collect the data from the Keyhole satellites.

Spanning the globe, the SCF remote sites are located at Thule, Greenland; Seychelles Island in the Indian Ocean; Guam; Hawaii; Vandenberg AFB, California; New Hampshire and just south of London. All serve to control

the 70+ spy satellites and collect the ELINT (Electronic Intelligence), COMINT (Communications Intelligence), SIGINT (Signal Intelligence) and RADINT (Radar Intelligence).

Leaks from the Big Blue Cube describe a vast command center that has at its command a monitoring clearing house that would stagger the imagination of any utility or military monitor. Imagine racks and racks of equipment that let you call up the video and radio being intercepted by the Keyhole satellites. Punch a button and instantly you have a bird's eye view of the Kremlin. Hit another and you can intercept the communications of the highest ranking Soviets as they use their car phones. A note to you electronic whizzes at the NRO: all I want is just to spend a few hours inside the Big Blue Cube and I would die a happy man.

With my mouth still watering I'll conclude our three part look at the wonderful radio toys that belong to Uncle Sam. I have to chuckle when I think of all that high tech miracle eavesdropping gear and then I hear the government is worried about me listening in on cellular phones.

Mail Bag

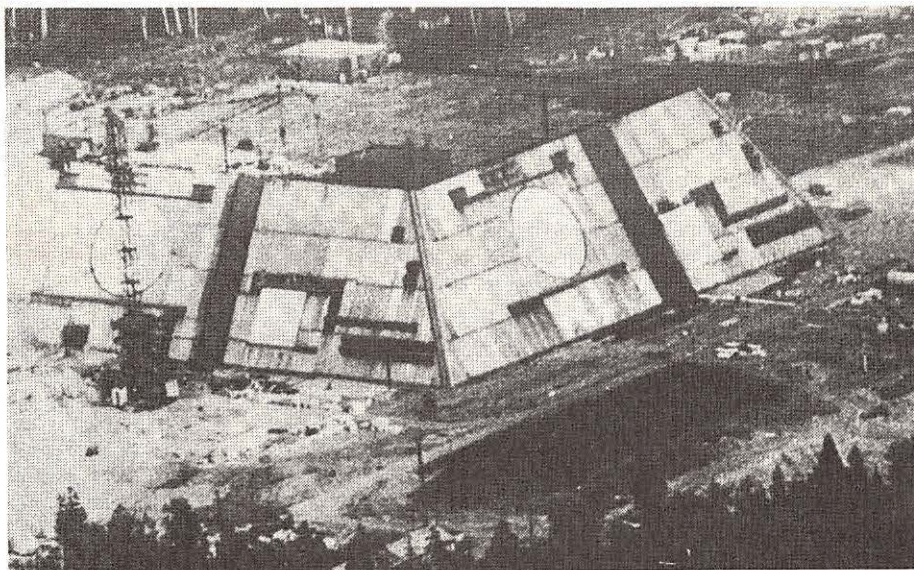
I feel bugged. It seems the "Federal File" struck quite a few nerves with its look at electronic eavesdropping (bugging) a couple months ago. I received an interesting letter from James Brown (no, not the godfather of soul) of Ridgefield, Conn. I'll let him tell you in his own words.

"I promptly entered the 'Federal Files' list of known bug frequencies into my AOR 1000 scanner. I was jumping with excitement when the AOR stopped on 169.225 (NBFM). There wasn't any voice or other sound, just a slight



Soviet SU-27B Details of this Soviet Fighter were first discovered by the Keyhole series of satellites

Steve Douglass



KH-11 Satellite image published, possibly by accident, in the 1988 Department of Defense publication *Soviet Military Power! An Assessment of the Threat*, hints at the high resolution photos obtained by the Keyhole series spy satellites. Image is of an anti-ballistic missile radar system known as the "pill box", located north of Moscow.

wasn't any voice or other sound, just a slight crackle, a definite pick-up of a weak transmission . . . I hopped in my car, Grove ANT-4M attached and left my driveway to see if I could track down the source of the transmission. To my surprise, at the bottom of the driveway the signal disappeared."

James went on to describe how he went on a bug hunt inside his home using his scanner and a Optoelectronics 1300 H/A frequency counter. He found the source of the signal was the AC power line and to a lesser extent the phone line. He says the two lines enter the house at the same place. Here is James' question: "What the heck could this be but the worst?" James assures me that he is no one that any three letter government agency would be interested in.

James, there are a few things that it might be. First, you might be picking up some RF from the AC or phone line, but the signal seems too strong for that. Second, some old style wireless intercoms and baby monitors use the AC lines to receive and transmit. Even if you do not have one of these devices, a neighbor might. Because some apartments and houses share the same AC lines the wireless device can sometimes be picked up over a relatively large distance. Although the frequency used by these devices is low (1160kHz) you may be receiving a harmonic. Keep listening and if you hear any voices calling other voices or babies crying etc, then this might be what you have found.

Finally, the worst could be that you have found an actual bug. Rumors abound about a bugging technique used by the CIA and NSA called the Infinity Bug. The details of this bugging system are top secret but what has

been leaked is both fascinating and scary.

Apparently it works this way: An agent using a computer tied into the local telephone substation's computer activates the bug by remote control. The beauty of the system is that an agent doesn't risk exposure by being caught planting a bug. The microphone that picks up any conversation in the targeted building, house or room is the telephone itself.

This is not a standard phone tap since the phone doesn't have to be in use or even off the hook. Supposedly, the agent's computer sends an unmodulated rf carrier into the phone line which reacts with any sound in the room. The carrier is then analyzed and demodulated by the spy's computer thus revealing the intercepted conversations.

You say that you have nothing to hide, James? Maybe somebody doesn't think so.

Freebie

Contributing *Monitoring Times* writer Steve Douglass is offering a freebie to Fed File fans and *Monitoring Times* subscribers. Steve has a list of national military aero frequencies (UHF and HF) that he is willing to pass on to you if you provide an SASE.

It is a great list filled with military frequencies monitorable from any location. Some of the listings are intercepts gathered during Desert Storm. Remember, only SASE's will get this list. Send yours to Steve Douglass, 6303 Cornell, Amarillo, TX 79109.

Meantime, don't forget to pass on tips, loggings and your wish list for future columns to yours truly, Rod Pearson.



High Performance

800MHz • CORDLESS
• BABY MONITORS

FREE CELLULAR OR CORDLESS
FREQUENCY CHARTS



MAX 800 GROUND PLANE

- Enjoy the best possible reception
- Hear signals other antennas miss
- Astounding performance outside
- Hear 10 times more signals when mounted directly on scanner
- Use on any scanner with optional adaptor or cable

50 ft. RG6—\$35.00 Only **\$19.95**

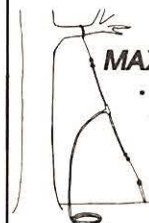
Base Adaptor—\$15.00

Hand Held Adaptor—\$12.00

MAX CELLULAR MAG MOUNT

- Receive 800 MHz in car.
- Place on car roof and connect BNC cable to scanner
- 3dB - 14 inches high—GREAT!!

Only **\$39.95**



MAX 46-49 MHz DIPOLE

- Be amazed by number of conversations heard
- Includes 50 ft. RG8X-BNC
- THE BEST!!

Only **\$49.95**

SASE for brochure
US shipping &
handling - \$4.00

MAX System™

GROUND PLANE ANTENNAS

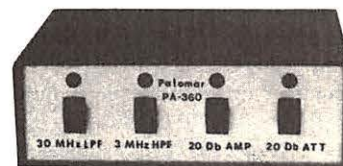
CK-MO-MC-VISA Accepted (MA add 5% sales tax)

Send payment to: Cellular Security Group.

4 Gerring Rd., Gloucester, MA 01930

Or charge by phone: (508) 281-8892

AMPLIFILTER™



- Improves shortwave reception.
- Use with any antenna, any receiver.
- Front panel control of all functions.

New! Amplifilter™ gives 20 db preamplifier gain or 20 db attenuation and cuts out overload and crossmodulation from local AM broadcast and TV/FM stations.

It has a broadband .1 to 1000 MHz amplifier, an attenuator, a 3 MHz highpass filter, and a 30 MHz lowpass filter. They are individually selectable by front panel switches, one at a time or in any combination.

Model PA-360 Amplifilter™ \$79.95 + \$4 shipping/handling in U.S. & Canada. For 12v DC. **Model PS-90 AC adapter** \$9.95.

California residents add sales tax.



Send for **FREE** catalog that shows our complete line of antennas, pre-amplifiers and filters.

**PALOMAR
ENGINEERS**

Box 455, ESCONDIDO, CA 92025

Phone: (619) 747-3343

Touring AmTran

Welcome aboard. Over the past few years, *MT* readers seem to be monitoring American Trans Air's air/ground communications with increasing frequency. Responding to several requests to feature the country's largest charter airline in our column, I visited the company and talked with Captain Steve Cooper, vice president of flight operations. Here is an inside look at AmTran and its inflight radio communications.

AmTran, Inc. is an airline-holding company with six wholly owned subsidiaries whose world headquarters are located in Indianapolis, Indiana. American Trans Air, their principal operating subsidiary, is a U.S. certified air carrier with worldwide authority, including domestic and international charter operations and domestic scheduled flights. Revenues are derived primarily from charter services, which have earned American Trans Air the reputation of "the nation's largest passenger charter airline."

Captain Steve Cooper, vice president of flight operations, has been with the company for 5-1/2 years. A 25-year veteran of the airline business, he holds a commercial pilot's (ATR) rating.

MT: Steve, our readers monitor both VHF and HF aero communications and I've received quite a few letters from those who've heard AmTran's flights being worked by ATC as well as by contract air/ground stations during trans-oceanic flights. They'd like to know more about the airline, so let's start with a subject dear to the hearts of aero comms monitors -- frequencies. For example, does AmTran have the same VHF frequency in use at all of its base stations or several different ones depending on the location?

COOPER: We made sure we had one common VHF frequency in use throughout our system. It's 131.525, incidentally.

MT: On trans-oceanic flights in regard to HF communications, I'm aware you use ARINC (Aeronautical Radio Inc.) for air traffic control relay service. But how about the LDOC (Long Distance Operational Control) services you utilize in addition?

COOPER: By far, we use ARINC and particularly New York ARINC. Over the Pacific, we utilize Honolulu and San Francisco ARINC. For LDOC comms, there's Berna Radio, Stockholm Radio, and Houston Radio (Universal Weather and Aviation Services). (See Table 1)

MT: At your various bases around the world, is there one common handler for your flights, or does it depend upon the location?

COOPER: We handle our own flights at several locations, but for our infrequent -- you might say ad-hoc charters -- we do contract with local ground handlers, such as Butler, Page, or other services, on a flight-by-flight basis. We also contract with some of the major scheduled carriers at some stations and, in those cases, we might also use their communications facilities at the local level.

MT: How many airports do you fly into at this time?

COOPER: Approximately 450, either on a regular or occasional basis. These include such diverse points as Katmandu, Nepal, Moscow, all points of the Caribbean, Buenos Aires, Argentina, Santiago and Chili. We're literally all over the globe. On any given day, we have 80 and sometimes more flights in the air.

MT: I understand that AmTran has something like over 2,000 employees now. How does this break down into number of flight crews? It was pretty obvious during our tour that the people who were working in the crew scheduling/following room were extremely busy.

COOPER: We have approximately 340 flight deck crew members: captains, first officers and flight engineers, plus management support pilots and over 700 flight attendants now. Also, we have almost 500 maintenance employees.

MT: Tell us something about your current aircraft.

COOPER: Our four 757s are the newest addition to our fleet. We're really proud of them. By the way, we're the first U.S. carrier to fly 757s across the North Atlantic to Europe and into Eastern Europe, at that. Two more have been ordered from the Boeing factory with the extended range capabilities to be installed. They'll be delivered early in '92.

The L-1011 Tri-Star which seats 362 passengers will remain the heart of our fleet for many years to come. We have 10 of these. We've operated a number of around-the-world flights with this equipment in which we've taken out all of the coach seats and put in 96 first-class seats. They're wonderful flights, 36-day world tours to be exact.

We have seven Boeing 727-100s. These are excellent charter aircraft, each carrying 129 people for flights of up to 4-1/2 hours' duration.



Capt. Steve Cooper talks about the country's largest charter airline.

MT: Since you fly internationally, do your pilots have any problems with foreign countries who use millibar settings instead of altimeter settings which are used here in the U.S.? I understand some pilots have had difficulties with this when they don't know how to convert from one type of setting to the other, or their aircraft isn't equipped to do so.

COOPER: No. Our altimeters are equipped with a window to read either way -- the standard 29.92 inches of mercury or 10.13 millibars -- that's very important. It's one of the things that we emphasize in our training, since we are an international carrier.

We find our crews, due to the fact they're accustomed to flying mostly nonscheduled operations, a lot of which are overseas, very alert to the potential hazards of miscommunication, as well as changes of measure.

MT: Most of us are aware the international language of aviation is English. However, how well or how accented it is can make a phrase sound totally different from what the original meaning was meant to be.

COOPER: That's very true. It's important for both pilots and controllers to speak slowly and clearly for this very reason, and to use standard aviation phraseology. Frankly, it's as necessary to use it going into Cleveland or Detroit as it is in flying into Paris or Rome. There's no room for miscommunication.

As a charter airline, we have to observe and abide by the same FAA rules and regulations as the scheduled airlines do. There is no difference in safety standards, whether it be in maintenance, crew training or what have you.

Table 1
Frequencies (HF) used by American Trans Air

NEW YORK ARINC (For ATC Relay):	5598, 6628, 8846, 11309, 11386, 13297
NY ARINC: (LDOC*)	6640, 11342, 13330
SF/HONOLULU ARINC (ATC Relay):	2869, 5547, 5574, 6674, 8843, 10057, 13354
SF/HONOLULU ARINC (LDOC):	3013, 6640, 11342, 11348, 17925
HOUSTON RADIO (LDOC):	6637, 10075, 13330, 17940
BERNA RADIO (LDOC):	8936, 10069, 13205, 17931, 18023, 18480
STOCKHOLM RADIO (LDOC):	5541, 8930, 11222, 11345, 13342

*LDOC: Long Distance Operational Control

NEW! NEW! NEW! NEW!

DIRECTORY OF MILITARY AVIATION COMMUNICATIONS (VHF/UHF)

**EUROPE, NORTH AFRICA,
MIDDLE EAST**

6,000 New Listings

\$19.95 plus overseas airmail

HUNTERDON AERO PUBLISHERS
P.O. Box 754, Flemington, NJ 08822 USA
Credit Card Orders: 1-800-542-SCAN.
Send for our free catalog.

MT: What are AmTran's plans for the future?

COOPER: To continue the development of our L-1011 and 757 fleet. Possibly more scheduled service on a limited basis. We'll continue to build our nonscheduled charter business as well, of course.

Here are American Trans Air's SELCAL codes and tail numbers of the aircraft which Captain Cooper obligingly provided for us:

727s: N283AT - HMBD, N284AT - JMBE,
N285AT - JMBF, N286A - JMBG,
N287AT - HMBC, N288AT - BHCM,
N289AT - BKAC

757s: N750AT - KQDE, N751AT - KQDG,
N752AT - KQDH, N757AT - KQDF

L1011s: N185AT - FKBE, N186AT - FKBD,
N187AT - FKBC, N188AT - HLJK,
N189AT - BJHK, N190AT - JMBL,
N191AT - JMBK, N192AT - JLCD,
N193AT - JMCE, N195AT - BHCI.

I found the scope of AmTran operations to be more impressive than I had anticipated. After today, I hope MT's readers will be listening for their flights all over the world from Ft. Myers to Katmandu. A sincere thank you to Steve Cooper for a very informative conversation.



Crew Scheduling/Following

Odds and Ends

• A fascinating history of Air Traffic Control from the early '30s to the '70s has been contributed by former Air Traffic Controller Mark Murphy. It's far too long to reprint within this column, but if any of our readers would like a copy of it, send an SASE to Plane Talk c/o MT and I'll send it to you. It makes absorbing reading, to say the least.

• This year we say good-bye to an old friend: Atlanta Flight Support, a division of Eastern Airlines. Two years ago Plane Talk took a tour of their facilities and interviewed the manager and the chief radio operator. In operation since the early 1970's, Atlanta Flight Support is now permanently shut down. We've heard on good authority that at least two former employees can now be heard on San Francisco's ARINC frequencies.

• Rumor has it that Northwest Airlines and the Soviet Union are planning to begin proving flights for a trans-Siberian international air route. The USSR has approved specific routing for the first flight on which a Northwest 747 freighter will depart New York for Anchorage, then continue on to Tokyo through Siberian airspace.

The flight is part of a joint venture between Northwest Airlines, the Soviet Union and Honeywell's Commercial Flight Systems Group. Its goal is to develop commercial transport avionics that can receive signals from both the U.S. Global Positioning Satellite and Soviet Glonass.

Wouldn't that be a great flight to monitor? We'll keep you informed as to any new developments.

Readers' Corner

• Jack NeSmith has proposed that we devote some space in our column to aero charts -- how, why and when they're used. If anyone has specific questions concerning these, please let me know as soon as possible and we'll work the answers into a future column.

• Bill Battles tells us that Boston ARTCC has relinquished oceanic airspace to New York Center's Oceanic Sector. It covers the area from 50 miles north of POGGO intersection (41.08N/67.00W), then a straight line to OWENZ intersection (39.49N/73.15W), then from OWENZ due east 300 nautical miles to 30 miles south of SLATN intersection (39.07N/67.00W).

"Well, so what?" you say, "I live in Atlanta (or Sleepy Rock, IL) and wouldn't be able to hear the New York or Boston Centers anyway on VHF."

True, very true. However, when you're listening to NY ARINC on HF working international flights inbound to airports on the North American continent, you'll hear a lot of references to "Contact New York (or Boston) Center on such and such a VHF frequency." If you enjoy tracking flights across the country using ARTCC sector charts, you'll want to make note of this on your Boston and New York Center charts.

• Frank O'Connell of California sent in the following airline/LDOC frequencies. Remember, many companies on these frequencies work other airlines' flights in addition to their own and several companies may share a single frequency:

- 5529: Madrid, Spain (Iberia Airlines)
- 5532: Johannesburg, South Africa (Springbok-South African Airways)
- 6535: Worldways Toronto Dispatch
- 10072: Singapore (Singapore Airlines); Frankfurt, Germany (Lufthansa Airlines)
- 13348: Honolulu, Hawaii (Honolulu ARINC LDOC)

That's it for now. Next time we'll have more HF airline frequencies, a look at some new aviation books, and other goodies.

Until then, 73 and out.



A Diamond in the Rough

An oasis has been discovered in the Sierra foothills of northern California. No need to search. No map is necessary. Just tune to 89.5 FM for refreshment and adventure. Experience a diamond in the rough: full spectrum community radio KVMR.

Thousands of stations all over the country are continually pumping out only the best-selling rock and country tunes resembling each other like Xerox copies. Inside the antique brickwork of The Miner's Foundry Cultural Center in Nevada City, relief can be found from repetitive "Shopping mall radio."

Just leave your radio tuned to the station all day and it will be filled with surprises. You might wake to Ronna Joseph's "On and Off Broadway" or "Country Line Bluegrass" hosted by Eric Rice. Over lunch you could hear all about psychic phenomena, unusual folk music, or even readings for the blind.

Expand your musical tastes as Rosa serves up something hot and Latin by Celia Cruz or cool and blue from Bessie Smith to bring pleasure to your afternoon ride home. Anne O'Dea Hesbeck will enchant you with Celtic music by moonlight. There's "Dead Air" from KVMR's Jonathan and Winfield as they tribute the popular California band The Grateful Dead.

The variety of programming is limited only by the imaginations of the people who produce it. The only restriction is good taste. Although the KVMR broadcast schedule is extremely diverse, its ingredients are calculated and blended like a fine wine. A ten member board of directors steers the station's movements along with a program advisory committee, both representative of the communities and listeners that KVMR serves. At the helm is newly appointed station manager Ray Diggins.

Ray spent six years managing a commercial community station, KOTR FM, in Cambria, California, before becoming station manager at KVMR. Besides management, he has been employed as a program director, advertising salesperson and promoter. Diggins brought all his experience and spirit to move KVMR onto a new plateau.

The station has been on the air over 13 years. During this time, the operation almost went into bankruptcy forcing the station to change control and management. Under Ray's leadership, KVMR is being run with aggressive strategies seen in commercial radio, instead of settling for breaking even as a noncommercial entity. Their bank ledgers are now filled with black instead of red ink, and KVMR continues to grow.

Programming

A wealth of talented people are on the staff

of KVMR, and Diggins is doing all he can to promote the ongoing evolution of the station's already excellent programming. About 135 people appear as KVMR air personalities each month and they are all unpaid volunteers.

KVMR's sound is consistently mature, innovative and proficient, but Ray believes good can always be better. Production values are kept high by constant training and practice. Anyone from the community can come to the station as a place to learn and perform. Formal classes in broadcasting begin every three months encouraging newcomers to bring fresh ideas and talent to the station.

Diggins has just added a half-hour newscast, produced by The Pacifica Foundation, for daily hard news coverage. Morning and afternoon drive time shows are heavily spiced with community news and event listings compiled by KVMR staffers.

KVMR airs an enormous variety of news, discussion topics, and musical styles, but the order of their presentation is anything but random. Instead of relying on demographics to develop a program schedule, Diggins uses what he calls "psychographics." A show could be very different than the one it follows, but it will hopefully attract like-minded people of similar interests.

Balancing the Budget

All FM stations operating between 88 and 92 MHz are noncommercial and prohibited by law to air advertising. But money is necessary to keep any operation on the air. KVMR takes a different approach to fund-raising by not relying on large corporate grants and deep-pocketed underwriters. A lot of work goes into their survival. Over 200 local businesses sponsor the station along with thousands of people who listen.



Rosa loves to play the blues, gospel and salsa on KVMR



Nutritionist Ray Kent talks about his crafts on Rosa's KVMR show.

A community station can be an excellent tool to promote commerce in a small town like Nevada City. Advertising dollars are well spent when invested in KVMR. Low key announcements acknowledging local businesses that support the station are heard regularly on the air.

Underwriters also reach listeners with traditional and effective print advertising featured in "Airwaves," a local entertainment guide including the station's program guide and profiles of air personalities. Produced by The Nevada City Community Broadcast Group, the licensee of KVMR, "Airwaves" is distributed free to listener-sponsors every other month. You can find it in businesses all over the KVMR listening area.

Individual listeners have many avenues to support the station as well. Everyone is invited to join The 895 Club. Members enjoy a variety of discounts including tickets for KVMR concerts and other events in return for their donations. An automatic electronic funds transfer system has been set up to give 895 Club members the convenience of having monthly contributions to the station billed directly to their credit card accounts.

KVMR's monthly variety entertainment show, "Nightlive!" is another source of income. This live concert series, now in its fourth year, brings talent like Richard Thompson, Los Lobos, John Gorka, and David Lindley and El Rayo-X to Nevada City. Profits from ticket sales help KVMR stay on the air. Auctions and fund drives are held regularly and listeners can even support specific shows with regular donations to KVMR's Associate Producer's Club.

KVMR's alternative music and public affairs programming has had a profound effect on everyone who listens and the people who create it. Tower Records and other local music stores have seen dramatic increases in sales of music outside the commercial mainstream due to air-play on KVMR. A new identity has been created for Nevada City as a cultural center for concerts

Be an American BandScan Reporter.

See any stories about radio in the local paper? Send them to *Monitoring Times*, PO Box 98, Brasstown, NC 28902.

and a variety of other art forms. KVMR's home includes a large theater and a beautiful stone meeting room, along with its studios, providing a perfect venue for these activities.

Increasing Coverage

Now operating with 2000 watts broadcasting from the top of a mountain, KVMR can be heard over 100 miles away covering Sacramento with a strong signal which travels as far as Vallejo, a San Franciscan suburb. Diggins is planning an ambitious multi-station network to expand the range of The Nevada City Broadcast Group. A new antenna on a taller tower, and a new transmitter will boost KVMR's reach soon.

A sister station, broadcasting KVMR programming on a different frequency, has been applied for. Operating from Truckee, California, the Lake Tahoe region will be able to hear KVMR if the project is approved. Similar satellite stations are being planned near Fresno, Redding and Bakersfield, that will eventually cover over half the state with community programming KVMR style.

Ray Diggins and the KVMR staff are producing important alternative programming for central California. As Rosa would say, "This is the station where you'll always say 'I can't believe they played that. That's so cool.'" It's a place where people are encouraged to be different. If radio all sounds the same to you, discover KVMR. It's truly a diamond in the rough.

Bits 'n' Pieces

■ No pictures please. Deborah Norville is returning to broadcasting, but will be leaving the cameras behind. She won't even have to leave her home.

After months of endless publicity concerning her meteoric rise and fall as co-host of NBC's "Today" show, Norville left television to give birth to her first son. The woman who replaced Jane Pauley will be replacing another media giant, Sally Jesse Raphael. Norville will host the talk show now chaired by Raphael on ABC Radio from her New York home.

It may be the perfect situation at this point in her life. "I very seriously want to stay home with my baby. I feel it's important for him to be with me. I didn't want to give that up," Norville said in a press conference confirming the deal.

Her show will feature telephone call-ins and interviews, with a variety of celebrities and human interest stories. Deborah Norville will be heard each week night live, from 7 to 10 p.m. Eastern time, with delayed broadcasts in some areas starting next month.

■ After waking Boston every weekday morning for 34 years, Jess Cain is heading back to college. Reader Malcolm Kaufman writes that the retiring

WHDH personality may be 65 years old, but life has just begun. Besides radio, Jess has appeared on Broadway and at the North Shore Theater in over 20 plays. A course on Shakespeare at Harvard is in the immediate future. Continuing his education at Boston University and, perhaps, becoming a teacher, might fill the days to come.

Cain began his career in the mid 1950s when television was king. When asked to host a show on WHDH "I kept protesting. I said 'You don't understand. There's no radio anymore. It's all pictures.'" Jess eventually ate his words, becoming one of the best known voices in all of Beantown with an enormous audience.

As trends changed, the station dropped most of its music content, replacing it with talk and information. Mornings on WHDH began to feel like an endless horserace. "Now there's barely enough time to go to the bathroom," Cain said shaking his head. "I'm either talking or introducing someone else." Jess admits he'll miss broadcasting daily from the WHDH studios at the top of the Prudential Building, but won't miss waking up at 3 a.m. at all.

■ Is it a pirate or not? Reader Alvin Brown was one of several people who tracked down the mysterious signals of WNSX 589. Operating on 1620 kHz, a popular frequency for unofficial broadcasting, WNSX 589 has been heard all over the east coast and beyond with its powerful 10 watt signal.

Owned and operated by The City of Virginia Beach, Virginia, the station broadcasts news to tourists and passersby about local recreational facilities and events. A 35 foot antenna is supposed to radiate a signal heard only for two and a half miles.

WNSX is on a clear channel, and when darkness comes, the signal travels for hundreds of miles via skywave. Listen for the voice of city employee Courtney Dyer. This could be a great DX catch for your logbook.

New Station Grants

Look for these stations coming soon to a radio near you. Dothan, AL 101.3; Anchorage, AK 88.1; Prairie Grove, AR 94.9; Montecito, CA 92.9; Fitzgerald, GA 96.9; Roswell, GA 107.5; Vidalia, LA 104.7; and Altoona, WI 98.1. Courtesy of the *M Street Journal*.

For Sale

A current fad in broadcasting is to rent time on a station instead of buying the property outright. Here's an example: A full-time South Carolina AM station featuring 5 kilowatts during the day, with reduced power at night, is seeking qualified religious programmers for a lease arrangement. The station features excellent facilities for

ELEVEN METER COMMUNICATIONS

The newest supplier on the east coast of c.b. radios, scanners antennas, microphones radar detectors, coax connectors, telephones answering machines & mobile accessories.

we carry a complete line of 27 Mhz. equip. and much much more. catalog \$ 2.00

P.O. Box 3569
Poughkeepsie, n.y.
12603

producing programming with an apartment available as part of the deal. Please call 803-854-2671.

Another unusual arrangement: buy an AM and FM station as a package or separately. Both cover areas of northeast Ohio and northwest Pennsylvania. The AM broadcasts on 830 kHz with one kilowatt and the FM uses 96.7 MHz with a Class A power authorization. The stations cover broad areas between Cleveland and Pittsburgh and serve strong, developing areas with remarkable financial growth. Easy financing is available, and the asking price is \$900,000. Call Patrick Engrao at 412-347-2865.

International Bandscan

All over Beijing, people are listening to the soft rock love songs of Easy FM, featuring slick English speaking disk jockeys. The station is run by the Australian firm AWA Media, the only outside broadcasting organization doing business inside mainland China.

By popular demand, Easy FM will soon be heard in four more Chinese cities, and their success has become a commercial gold mine. AWA Media is now selling Easy FM advertising time in Sydney, Australia, Hong Kong, New York and London, offering a unique opportunity to reach huge Chinese audiences. Easy FM is easily the number one station in Beijing, reaching 82 percent of all listeners between 18 and 45 years old every week.

Credits

Many thanks to the *Boston Globe*, *Broadcasting Magazine*, *The M Street Journal* and NBC news. Also thanks to readers Ron Carruthers, Malcolm Kaufman, Larry Anderson, David Parsons, Alvin Brown, and Bruce Elving. Until next month, happy trails.



Terrestrial Interference

Only a few weeks after installing my satellite system in 1984 I noticed a peculiar deterioration of the signal on certain channels on Galaxy 1. G1 is the big cable bird and had at the time the strongest signal of all the geosynchronous satellites. The only thing I could imagine was that possibly the problem was in the receiver or perhaps at the dish with the downconverter.

After a cursory inspection out at the dish and moving the dish to other satellites where the problem didn't appear, I could only conclude the problem was with the satellite. A check with a friend whose dish was some eight miles to the north dispelled this notion and I was left to ponder the problem.

Possible culprits

There are certain things which can cause deterioration of the signal. The giveaway is that there will be a definite pattern to the signal loss. For example, it is common for wasps to construct nests in the throat of the feed horn. This activity works to physically block the signal. When this happens all channels on all satellites will be affected, not the random interference I was experiencing.

Another problem is that the dish will get out of alignment. This happens when, through the ravages of winter or a big wind storm, the effects of weather have loosened the various mechanical connections at the dish. It's possible for the actuator (the motor which moves the dish) to become loose.

This may cause just enough slop to shift the dish slightly off the bird. It's also possible that the bolts which hold the polar mount fast against the mounting pole may have come loose and the whole assembly has possibly shifted off the satellite.

Quick fixes

The solution to all of these problems is simple. With regards to the wasps, a good dose of wasp spray is in order. To do the job properly, wait until after dark when all the wasps have returned to the nest and zap them.

To prevent the feed horn from being a future building site, simply place several layers of plastic wrap across the throat and secure with a rubber band around it. Manufacturers of feed horns usually provide a plastic cap which fits over the throat and allows microwave signals through. Unfortunately, many inexperienced installers toss the caps in the installation and the consumer may not notice the problem for months.

With regards to alignment problems, the solution is equally simple. Best results in realignment are achieved using a relative strength peaking meter. This device is inserted, in line, between the LNB (Low Noise Block downconverter) and the receiver preferably at the dish so that changes made at the dish can be easily monitored.

Monster on the horizon

However, there were no wasps and the dish was dead on track. So, what was going on? The answer was found as I was driving around the area and saw a structure which was certainly not in evidence when I put the dish up several months previously. It was a microwave tower which stuck up above the trees by at least a hundred feet. On it were several microwave dishes pointed straight across my horizon.

Although I didn't know it at the time, it would take me years to remove the bulk of the interference, and I would end up trying out virtually every type of filter and microwave blocking technique. The upshot is that I'm almost convinced microwave terrestrial interference is capricious and actually curing it involves a great amount of luck.

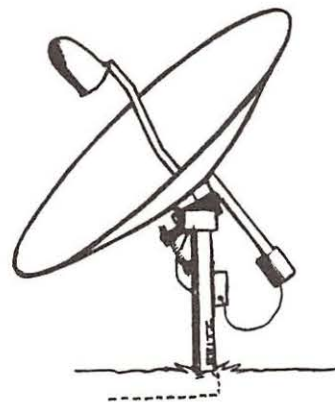
Those whose TVRO installations are not affected by the scourge of TI can't imagine what the problem is and those who are familiar with the beast will have their own horror stories to add to mine.

TI affects the signal from a satellite in varying degrees. In very light conditions it appears as a small amount of "sparklies" on the screen reminiscent of the alignment being very slightly off. In heavy conditions the entire picture may be wiped out for long periods or there will appear to be a heavy pulsing of interference. Naturally, it will always occur on the channels you're most interested in watching.

How TI works

The first objective in analyzing TI is to determine the source and direction of the interference. As in my case, the offending tower was easily detected and a plan for correction could be developed.

In virtually all TI cases the interfering signal is from a nearby microwave tower. These towers relay telephone and data signals in long distance service and use the 4 GHz band for their transmissions. This happens to be the same band of frequencies used in C band satellite transmissions and it's the "cross transmissions" which cause the interference.



There are other sources of interference which can appear to be microwave TI but which are from other sources. Among these are powerful RF transmissions from nearby sources such as commercial FM radio towers or hams running high power. These signals don't actually get into the dish, but may find their way into your receiver through exposed lead-in wires, AC cords or the receiver's front end. You've got to be very close to the transmitter for such an effect.

Another apparent TI situation comes from the blocking of the satellite signal by the foliage of large trees. This happens most often when the TVRO installation was done in the winter and the leaves were off the interfering tree. Come spring and summer, the leaves return to the trees and do a very effective job of blocking out the satellite signal.

I have even seen instances where a tall pine tree, just off to the side of the satellite position, is pushed into the beam of the satellite signal by high winds. On a calm day there is no TI, but it mysteriously returns on windy days.

Mechanical TI cures

Since TI signals are really just in-band signals arriving at the feedhorn out of phase, it stands to reason that keeping those signals out of the dish would be the most effective way of getting rid of TI. To this end it would be advantageous prior to installation to determine the direction from which the TI is emanating. Use existing buildings or dense tree stands to shield the dish from that direction.

If no trees exist or as in my case, the dish was there first, you may build a fairly effective TI block using a braced 2 by 2 inch wood frame stretched with metal hardware cloth of the finest mesh. The frame should be at least 10 or 15 feet on each side in order to effectively "hide" the dish from the offending signal source.

Temporarily place the screen in different positions around the dish and view the results. Where the TI is seen least you should plant two

4 by 4s and attach the screen frame to them. This will make the installation permanent.

Electronic TI cures

The closer your cure for TI can be placed to the source, the more effective it will be. The above mechanical cure may be the most effective. However, if TI persists the next step is to try to catch the TI at the feedhorn. To that end a number of filters are available which can be placed in-line between the feedhorn and the LNB.

The next step is to install an in-line filter before the signal gets into the receiver. After that you may try to install a filter using the second IF loop on the back of the satellite receiver. Finally, you may install a filter between the receiver and the TV set.

These cures are in descending order of effectiveness because they are each succeeding further away from the source of the interference.

Sources

There are several sources for more information on terrestrial interference and the equipment for various cures. The best place to start is Microwave Filter Company. This company has hundreds of filters for every situation and offers a highly informative catalog on the subject of TI. Phantom Engineering and ASP Filters are also companies which have long dealt with the TI problem.

The addresses and phone numbers:

Microwave Filter Co., Inc.
6743 Kinne St.
E. Syracuse, NY 12057
Phone: 315-437-3953 or 800-448-1666

Phantom Engineering, Inc.
15875 Concord Circle
Morgan Hills, CA 95037
Phone: 408-779-1616

ASP Filters
P.O. Box 24956
Lexington, KY 40524
Phone: 606-223-0924

MAILBAG

• Bill Pletcher of Lighthouse Point, Florida, writes to remind us that the SBCA (Satellite Broadcasting and Communications Association) offers an informative zoning manual for about \$30. He says that the manual was instrumental in getting his own town's tight zoning restrictions changed.

For more information on the manual write the SBCA at 300 North Washington St., Suite 208,

SOMERSET ELECTRONICS Announces... THE MICRODEC™ 'SERIES'

Made in USA

NOW IT'S YOUR CHOICE! You select the Model and the features to meet your decoding and budget needs*! Each choice is fully upgradeable to the top of the line! With our new VIP50 Interface you can choose an expanded display (32x16 characters on your television) and hard copy - with or without a computer!

FEATURES:

(Compact Size: 1.3Hx5.1Wx5.3D)

MORSE: DECODES CW WITH

Autospeed, software filter, speed display ★

RTTY (60,67,75, 100 WPM) (major shifts) ★

RTTY (bit inversion) ★

ASCII (110 & 300 BAUD) ★

ASCII (bit inversion) ★

AMTOR/SITOR Mode A-ARQ ★

AMTOR/SITOR Mode B-FEC ★

Smart display/Intensity control

On/Off with volume

Serial Interface

Code Oscillator

AVAILABLE OPTIONS:

Display Colors: (Green standard--no charge) Red, or Yellow (your choice) \$15.00

NICAD Batteries for portability \$29.95 Model VIP50 Adaptor \$189.95*

*MD300 price includes the VIP50 Interface Adaptor.

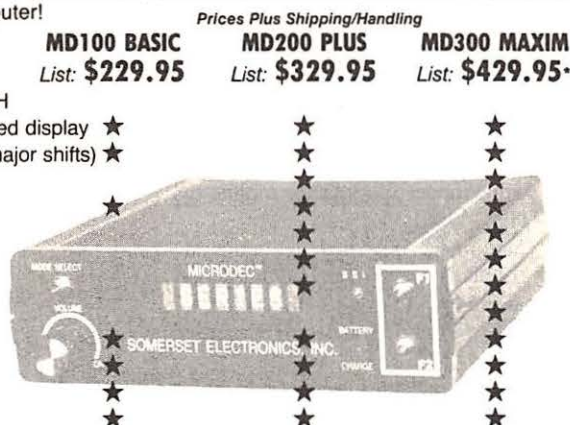
(TV Stations, phone companies, and public utilities are selecting MICRODEC™ for their operational and FCC requirements - FCC Docket 86-337.)

Call us for special introductory prices and orders at 1-800-678-7388.

Fax orders: 1-407-773-8097 • Technical assistance: 1-407-773-8097

VISA • MASTERCARD • PERSONAL CHECKS • MONEY ORDERS

SOMERSET ELECTRONICS, INC. • 1290 Hwy. A1A, Satellite Bch., FL 32937



Alexandria, VA, 22314, or call them at 703-549-6990.

• Ken MacLeod of Friday Harbor, Washington, writes to say that he enjoys his TVRO system very much, especially NASA Select-TV. He also enclosed an article from *Satellite TV Week*, a weekly guide for dish owners. The article is entitled "Scanning for Satellite Radio" and was written by Mark Long.

The advantages of using an ICOM IC-R7000 are detailed along with a chart showing the relative frequencies of a few of the various services. Mark Long finds the AOR 2515 scanner radio a good SCPC receiver as well as the Heil SC-1 which is a dedicated consumer grade SCPC receiver.

The key things to remember, if you're going to receive SCPC signals from your scanner or R7000, are that you'll need a splitter capable of splitting the 950-1450 MHz signal. Secondly, the splitter will need a DC block on the leg which feeds the scanner or R7000 to prevent DC energy which is used to power the LNB from getting into your radio.

• Speaking of SCPC, Guillermo Gonzalez of Miami, Florida, would like to know how to hook up his satellite system to his GE TV-band radio to receive SCPC.

Guillermo, it depends entirely on the kind of satellite receiver you have and, unfortunately, you did not include that information. However, if you look on the back of your satellite receiver you may find a short piece of coax cable, about three inches long, which goes from a terminal labeled "70 MHz IF IN" to one labeled "70 MHz IF OUT."

If this is the case, simply take a normal TV coax splitter and disconnect the end of the loop from the IN terminal and connect it to the leg of the splitter to be split. Take another short piece of coax from one of the splits and connect it to the antenna of the TV-band radio. Use a 300 Ohm transformer and an antenna "clothespin" to make the connection easier.

Take a third small piece of coax and connect from the other split back to the original 70 MHz IN terminal, thereby completing the circuit. Set the radio to tune the lower TV channels. Tuning across the dial you should hear SCPC signals about every inch or so. Don't worry about DC blocks on this splitter as there is no DC in the 70 MHz Loop.

Your receiver may have another loop instead of one labeled 70 MHz. If so, then you'll need a radio which can tune whatever frequency the loop provides. The setup will be the same.



Summertime

Wanna go on a DXpedition? Listen to hams around the world begging you to call them? You can! and there won't be any need to beg for money from the local DX society. All you need do is locate the rarest county in your state, drive there and set up with a modest portable or mobile rig and call CQ on 14366.

County hunting has become a major operating activity for hams everywhere. *CQ* magazine sponsors an award for working all USA counties, called USACA (United States All Counties Award).

There are several steps to this particular award, the first being the basic award which is issued for working five hundred U.S. counties. You then add stickers to the award for each additional 500 counties 'til all 3067 counties are worked.

If you decide to try for the All Counties award be sure of one thing - you will make a lot of friends on the way to the top. County hunters are a friendly lot, and it seems everyone knows everyone else. And of course the entire gang knows when there is going to be activity from some rare county.

Most county hunting activity takes place on 14366; however, nets are active on 28336, 21338, 7238 and 3865 on SSB. CW freqs are 14056.5 and 7035. Give a listen to these frequencies to find out what is going on, then jump in and join the fun!

As mentioned earlier, if you really want to be popular go to a rare county and give the gang a new one. It is quite a thrill to have a BV or HL (China or Korea) say please QSL!

VHF SWR

As those of you who have been active on VHF or UHF well know, it is not easy to obtain gear to measure SWR (standing wave ratio) on these frequencies at a reasonable price.

Radio Shack has recently introduced their VHF/UHF SWR - Power Meter model number 19.320. This unit will measure SWR and power on 144 and 450 MHz. I have used mine to set up several antennas and am quite pleased with the results.

Price is \$39.95 from your local Radio Shack. See Figure one.

A Small Transmitting Loop Antenna

Figure two is a diagram of a small transmitting loop antenna that was designed by G3BGR and published in *SPRAT* magazine. The unit works well on 7, 10, and 14 MHz.



Figure 1: VHF/UHF SWR - Power Meter

Instructions

A ten foot length of 5/16th copper tube is formed into a 39 inch loop as shown in the diagram (total length of ten feet will produce a 39 inch diameter loop). Use a metal chassis for the base and a broom handle or similar wood rod for the upright. A 4" by 6" by 1/4" plexiglass sheet is mounted on the top. A 75pf and 20 pf variable capacitor are connected in parallel and soldered to the loop as shown in the diagram. The 75 pf capacitor tunes to the approximate center of the band and the 20pf unit tunes for minimum reflected power on an SWR bridge.

The Gamma match is 12 inches of 1/8th inch (10 or 12 gauge) wire spaced one inch from the loop (the gamma match can be adjusted for optimum match but this should not be critical as the capacitors should take care of all the matching). No antenna matcher should be required.

This antenna has worked all over Europe and the USA from England with only 3 watts of power. Looks like a great idea for those of us with restricted space.

If you use ceramic trimmers for the capacitors, it should be possible to run about fifty watts of power. Should you want to run higher power, then purchase air variable capacitors to tune the loop.

If you try this antenna, please drop me a note informing me of your experiences.

MIR

Musa, U2MIR, has returned to earth and will be taking up other duties for awhile. U5MIR will continue operations from the space station.

The new crew will consist of Sergey Krikalev U5MIR, Anatoly Arcebarsky U7MIR and a British YL by the name of Helen who has joined the Soviet cosmonauts and will be active as GB1MIR/U. She will run only special events stations and will not be available for general QSO's. Helen will be using amateur radio mainly to contact school children in Great Britain in an experiment similar to the STS-37 shuttle activities.

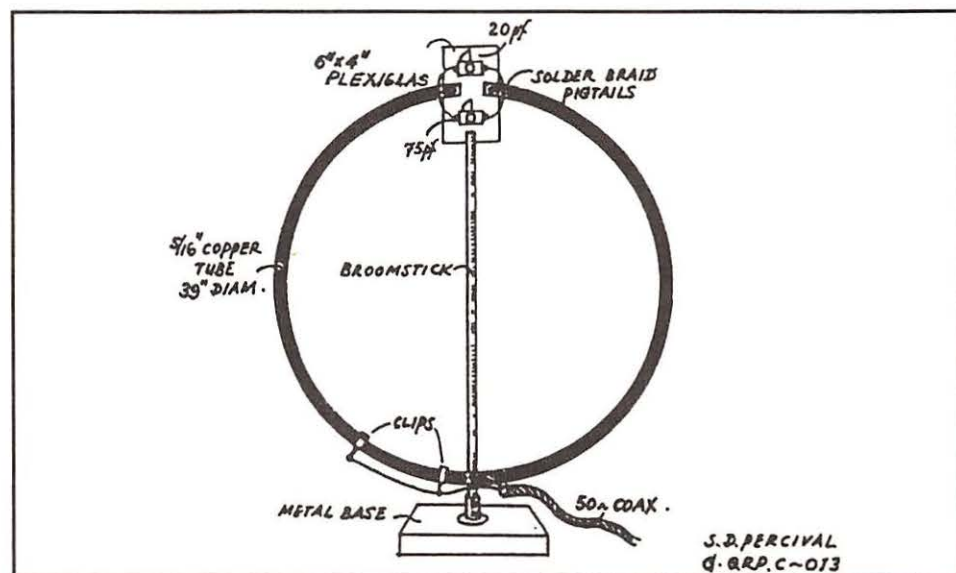


Figure 2 - G3BGR Loop Antenna

Pol Serardi's Ham DX Tips

The autumn DX season is just about upon us, and many of you have been getting ready by putting up and testing new antennas. Now it is time to take a rest from that hot sun. So, pull up a chair, a cool drink, and bask in the air conditioning or near the fan while you test those new antennas with these DX targets:

AUSTRALIA To celebrate "The Festival of Whales" (the annual return of humpbacked whales to Hervey Bay) look for special station VI4HBW in their log books. QSL to: Hervey Bay ARC, P.O. Box 829, Hervey Bay, QLD 4655, Australia.

BANGLADESH S2/WZ6C has been showing up on 21335 kHz at 1600 UTC. Here on a four year assignment, John recently operated a ST/WZ6C. QSL to: John Parrott, P.O. Box 5127, Suffolk, VA 23435.

GUATEMALA TG9AJR has been on 24950 to 24975 kHz 1400-2200 UTC weekends. QSL to: Cesare Casaroli, Piazza Conti 2, I-00010 Poli, Italy.

GUYANA 8R1JV has been showing on the 14222 kHz "HI DX Net" at 0300 UTC most days. QSL to: Mr. Jacinto, P.O. Box 10867, Georgetown, Guyana.

JORDAN JY9SR (Ray Shankweiler, Box 354, Amman, Jordan) has been offering this country on 17 meters and in code for those who desire it. If you are one, look no further than 18078 kHz at 0130 UTC daily.

LEBANON OD5ZZ is often on 14215 to 14225 kHz between 2300 and 0300 daily.

MARTINIQUE Offering this country to those who need it for RTTY, FM5DN can be found daily on 14083 kHz at 0430 UTC. If you log him, send your report to his QSL manager N3ADL, Douglas Priest, 1360 Providence Lane, Hatfield, PA 19440.

NICARAGUA This is another country not often available to the RTTY enthusiast, but that situation is a thing of the past, thanks to YN4JR on 14093 kHz at 2230 UTC most days. Send your reports to P.O. Box 122, Jinotepe, Nicaragua.

NEW DXCC COUNTRY The Penguin Islands (there are no penguins there) located in the South Atlantic just off the coast of Namibia and the DXCC country of Walvis Bay is now DXCC country number 323. Uninhabited, there were two DXpeditions to these islands in 1990 using the prefix ZS1.

RUWANDA 9X5NH has been a regular feature on 18135 kHz at 2100 UTC daily. Reports should be sent to his QSL manager DJ6EA, Lido Weber, Sternbergstr 54, D-7406 Mossingen 5, Germany.

RUSSIAN REPUBLIC August 2 to 8th will see the Leningrad DX Conference take place, and special station 4L3FS will be on all bands RTTY, SSB, and CW to celebrate this gathering of amateurs, not only from all across the USSR but around the world as well.

SRI LANKA A new prefix is currently active from here. 4S6 is assigned to entry level license class amateurs who may operate CW only: 3500-3600 kHz, 2115-21200 kHz, and 2800-28300 kHz.

USA The special amateur club station operating from the headquarters of the World Bank, 401WB is once again active. Look for the station on the air Monday thru Friday at 1700 UTC around 28460 kHz. Though it sports a United Nations prefix, "4U", it counts as USA for DXCC credit at this time. Nevertheless it would be an interesting place to have a QSL from, and you can do that if you log 4U1WB by sending a report to: World Bank ARC, 1818 11st NW, Washington, DC 20433.

'til next time, 73 de Rob

MIR will also be active on 432.675 as well as 144.55 MHz.

Amateur Television

I frequently get requests to do a column on ATV (Amateur Television). To date I have not delved deeply into this subject mainly because I have not been active on ATV since the early (read that early) days of SSTV and I simply have not had the time to build a TV station. That should be changing later this winter, and you will see

more info on TV in this column.

However, if you are truly interested in ATV there is an excellent magazine available on the subject: *SPEC-COM* is published by the United States Amateur Television Society. The magazine is available at a price of \$20.00 per year from *The Spec-Com Journal*, P.O. Box 1002 Dubuque, IA 52004-1002.

That's the end! See ya next month, take care,
es 73. Ike, N3IK

COMMUNICATION AT ITS BEST

AR-1000 \$379, AR-2500 \$463, BC200XLT \$269, BC-800XLT \$266, Card RD \$169
We also sell a variety of CB's, Radar Detectors, Phones, Answering Machines and Accessories.

For orders call: 1-800-33 TURBO



Free Shipping



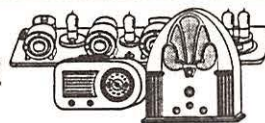
TURBO ELECTRONICS

P.O. Box 8034

Hicksville, NY 11802-8034

Questions welcome (516) 938-1946

FREE
SAMPLE
COPY!



ANTIQUE RADIO CLASSIFIED

Antique Radio's Largest-Circulation
Monthly Magazine

Articles - Classifieds - Ads for Parts & Services
Also: Early TV, Ham Equip., Books,
Telegraph, 40's & 50's Radios & more...

Free 20-word ad each month. Don't miss out!

1-Year: \$27 (\$40 by 1st Class)
6-Month Trial - \$15. Foreign - Write.

A.R.C., P.O. Box 802-P7, Carlisle, MA 01741

PC SWL \$99.00

A Complete Digital Reception System

PC SWL contains the hardware, software, instructions and frequency lists needed to allow you to receive a vast variety of digital broadcasts transmitted over shortwave radio. All you need is any IBM PC or compatible computer and an SSB shortwave receiver. The product consists of:

Demodulator
Digital Signal Processing Software
80 Page Tutorial Reference Manual
World Press Frequency List
Tutorial Audio Cassette with Samples

PC SWL automatically decodes Morse code, Radio Teletype, FEC (forward error correcting code), SELCAL (selective calling transmissions), and NAVTEX.

PC SWL lets you tune in on world press services with up to the minute news, meteorological broadcasts, ham radio operators, coastal shore stations, aviation telex and much more digital action on the shortwave bands. Find all the utility station action you have been missing.

PC SWL software uses the processor in your PC to do the work, why pay for another expensive box when a simple interface and your PC and do the job?

ADVANCED FEATURES:

Tuning Oscilloscope
Digital Waveform Presentations
Auto Calibration and Code Recognition
Continuously Tunable Filter Frequencies
Variable Shift
Adjustable CW Filter Sensitivity
Farnsworth Code Compatibility
Unattended Capture and Printing

Call or write for a complete catalog of products.

Software Systems Consulting
615 S. El Camino Real, San Clemente, CA 92672
Tel:(714)498-5784 Fax:(714)498-0568

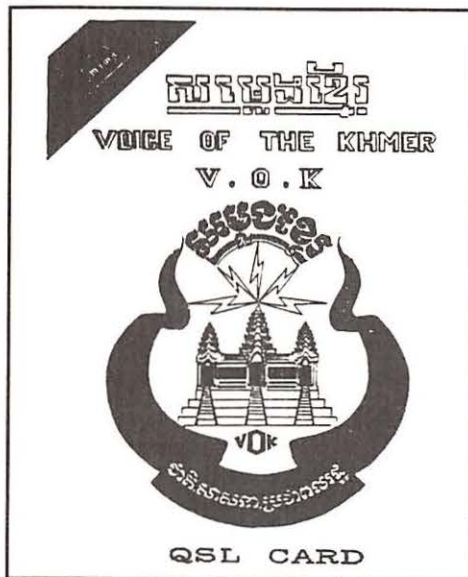
Just Give Us the FAX

Radiofax continues to be big news. The unlicensed station claims to be broadcasting 24 hours a day, seven days a week, on both 6205 and 1225 kHz. This is a station that really welcomes letters from its listeners. Everyone writing gets a mention on the air, and Radiofax has a sharp, two-color QSL card which it promptly sends in response.

Their address is The Trade Station, The Forge, Cranleigh, England, GU6 7BG. North American readers should have good success hearing them on 12255, although it may take several attempts.

Radiofax transmits with a power of 200 watts on 12255 and 1000 on 6205. While it is based in England, reportedly the actual transmitter site is in Ireland. Before recently returning to the air, Radiofax had been silent since 1988, when its transmissions generated over 1500 letters. It filed an application for a license as early as August 1986, but blames government inertia more than anything else for the lack of success in obtaining one.

In listening to Radiofax, I have been very impressed with the professionalism of the staff. Apparently this is another Europirate that was inspired by the Caroline legend. One of our English readers, John Bull, writes that Radiofax intends to broadcast programs produced by Radio Caroline as well as its own material. John reports good reception in England on 6205 but notes 12255 should be better in North America.



Clandestine Voice of the Khmer on 6325 kHz is an excellent verifier.

David Crawford has already had success. In Florida he bagged Radiofax on 12255, and for good measure also logged Radio Stella on 11416.3 kHz. Stella's studios are in Scotland, but, like Radiofax, transmits from Ireland.

Also having success in logging pirates from "the other side" is South Carolina's Gregg Allinson. Gregg heard one of the recent broadcasts by the Dutch Radio Tower on 15050 and was surprised to get a phone call from the station operator in response to his reception report. Gregg was told there should be more broadcasts in the future, so stay tuned.

John Bull also sends along some additional information on the Caroline situation. He says the transmissions on 6203 last winter could not have originated from Caroline's ship, the Ross Revenge, as it presently has only a mediumwave transmitter. Caroline did transmit on 819 for a while, but that has been discontinued. Despite reports that the Ross Revenge moved to a location off the coast of Belgium, Bull says it actually remained where it has always been, off the Kent coast of England.

While the 1991 Broadcast Act does give British officials authority to board vessels in international waters, this is thought to be illegal and will be challenged in court. Nor does it look like the Ross Revenge and Caroline are about to throw in the towel. A new generator costing 5,000 pounds was recently purchased for the ship. Caroline has been testing via satellite on 11.273 gigahertz, sound channel 7.56 MHz. This has been relayed by a shortwave station on 7558 kHz.

So, it appears we have not yet heard the last from Caroline. Stay tuned. We will keep you up-to-date on the Lady's plans for the future.

The Demise of WHDL:

To say we were overwhelmed with the number of readers who reported the closing of this Braintree, Massachusetts pirate on 102.1 MHz FM would be putting it mildly. No other event has ever generated so much mail to this column, and it was widely reported by papers in the Boston area.

WHDL has been on the air since 1982 with a maximum power of 80 watts. Its two operators, age 21 and 22, had quite a loyal following and were even planning a summer cookout for their many listeners. Dick Keough, one of our readers, reports his teenagers were regular listeners.

In addition to providing music, the station functioned as a community bulletin board for

teenagers and even broadcast one marriage proposal. It also had a lot of success doing interviews with whomever answered calls made to pay phones in area shopping centers. None of this made any difference. WHDL was shut down, and its principal operator fined \$750.

In addition to Dick, we wish to thank the following for information on the WHDL closing: Phyllis Werlin, Don Packard, Allan Dunn, Dave Sage, Johnathan Melick, Martin Swartz, Rick Dodds and an anonymous reporter. Our apologies to anyone we might have overlooked.

The End of KUSA Radio Wisconsin:

Rivalling WHDL for attention was the closing of KUSA, which received considerable coverage in Wisconsin newspapers. Actually KUSA was only one of two Wisconsin stations to feel the wrath of the FCC. The other was a 10-watt West Bend FM pirate on 96.9 MHz which played "alternative rock" music and identified as WZLP. WZLP had been around on an irregular basis for about four years and actually distributed its play list at a local record store.

Turn Your Radio On:

So, maybe you won't hear WHDL or KUSA. However, "Outer Limits" readers continue to report considerable success. We received a number of excellent logs this past month.

From our nation's capital William Schmitz reports reception of WHO on 7415 at 0150. And ye editor would like to thank WHO for the recent QSL received here. In addition to WHO, William had the controversial **Voice of Tomorrow** on 7410 at 0007 and 6240 at 0120 UTC. **Radio Comedy Club International**, possibly relayed by Radio USA, came in on 7417 at 0040 with comic songs and fake commercials.

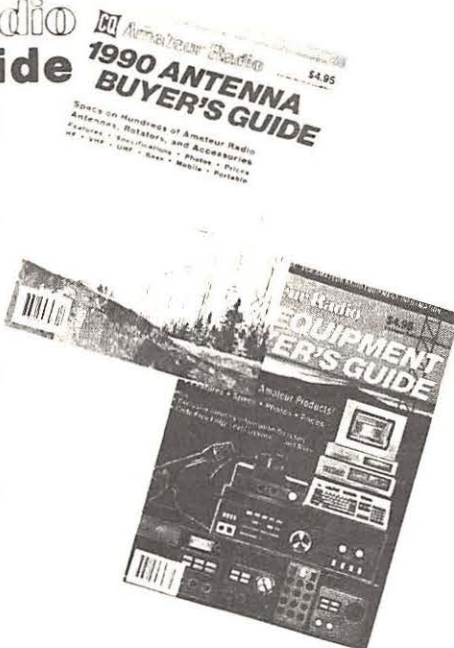
Out in California Skip Harwood had **Hope Radio** on 7411 at 0400. Skip reports **Radio Anarchy** is now off the air and is moving his location.

In Massachusetts Nick Grace had a strong signal from **Action Radio** on 7415 at 2303. Action radio featured music and comedy. From Illinois Andy Ronan writes he logged **Secret Mountain Laboratory** and **East Coast Beer Drinker** on 7415. Andy also had an unusual one on 7480. Has anybody else run across the **Chicago Tunnel Company**? Also from Illinois Matt Siegel writes to say he got a QSL from **Midnight Radio**.

CQ Amateur Radio Buyer's Guide

You can buy with confidence when you have all the facts. The 1991 Equipment Buyer's Guide gives you in-depth coverage of HF/VHF/UHF rigs and accessories. All the information is here in one handy, concise directory with descriptions, technical specifications, model numbers, retail prices and photographs. How do you get a ham license? What's the latest on the code-free license? What equipment do you really need to work the satellites? Should you buy a computer for your shack? How do you add computer control to your rig? You can buy with confidence when you have all the facts. Order the 1991 Equipment Buyer's Guide today!

You'll need the Antenna Buyer's Guide to squeeze every last dB out of your antenna dollars. Make sure you get the best possible antenna system for the best price! HF and VHF/UHF, directional and omnidirectional, vertical and horizontal, mobile and portable—they are all covered in depth. Tuners, cables, wattmeters and more! You'll find detailed charts, specifications, photos and retail prices. Advice on getting the proper tower and antenna permits from a leading authority on PRB-1. Step-by-step guide to putting up your first beam! The bands are hotter than ever right now. You can't afford to wait.



ORDER YOUR BUYER'S GUIDE TODAY!

Don't miss the single most valuable buying guide in the Amateur Radio field. Send only \$4.95 today. Foreign: \$6. U.S. funds. Foreign orders are payable in U.S. funds only by check drawn on a U.S. bank, or by U.S. Postal Service Money Order.

YES, please send my copy of 1990 EQUIPMENT BUYER'S GUIDE for only \$4.95 (Foreign \$6.00) postage paid.

Number of Copies _____

Date _____

Call _____

Name _____

Address _____

Zip _____

City _____

VISA

Card No. _____

Expires _____

Signature _____

(Signature required on all charge orders)

Mail to: CQ Communications, Inc.
76 North Broadway, Hicksville, NY 11801

Florida's Mark Seiden says he found Secret Mountain Laboratory on 7415.75 at 0234. The station was claiming a Hawaii location, but of course it could be almost anywhere.

Dwight Weidman checks in from West Virginia with a log of Boner Radio on 7415 at 0225. This station is more politically oriented than most pirates. In fact, it claims to be a clandestine. When Dwight heard them, they were discussing the proposed intervention to help the Iraqi Kurds.

Pennsylvania's William Rake reports receipt of a QSL from East Coast Beer Drinker. Meanwhile Virginia's Pat Murphy continues to have considerable success. Apparently WORK is back, because Pat found them on 7415 at 0056. He also came across a Spanish numbers station on 7415 in USB at 0100. Pat notes that is a most unusual frequency for a numbers transmission.

Malcolm Milner sent us an article from the New York Post which reported on a very dangerous and irresponsible type of pirate activity. A man claiming to be God has been jamming New York City police frequencies with his broadcasts.

Alan Masyga's mailbox in Minnesota has been full lately with QSLs from WHO, Hope Radio, Canada's Radio Beaver (which the station says he has heard more than anyone else), K2KTS, and the Voice of Bono. Alan also had a log of Action Radio on 7415.3 at 0018.

My thanks to WJDI 1620 kHz for the very

sharp three-color QSL certificate they recently sent. It was worth the wait.

Elsewhere:

In Oklahoma John Carson reports daily reception of Sudanese clandestine Radio SPLA on 11710. The station has English IDs at 1300 sign-on and 1400 sign-off.

Bob Thomas of Connecticut says Radio Havana, Cuba, has had some special USB transmissions on 5965 from 0400 to 0600. These may be over, but it might be worth a try to see if they are still continuing.

The recent peace settlement between the government of Angola and UNITA should not

mean the end of the old clandestine Voice of the Resistance of the Black Cockerel. UNITA plans to continue operating it. Last time I heard this it was on 15500 at 2100, but it may have moved. The recent victory by Ethiopian and Eritrean rebels probably means the end of all or most of the Ethiopian clandestines.

Finally, a disturbing note. The CIA's Foreign Broadcasts Information Service reports that in Germany neo-Nazi youths reported plans for a Hitler birthday rally via their pirate radio station.

The CIA also notes clandestine Voice of Free Iraq (17960) has changed its name to Voice of the Iraqi Opposition. Thanks to Frank McGuire for this information.



the trade station

The First, Crankshaft, England, GUS 710

6 205 1kW
12 255 0.2kW 12/5/91 0.105 0315417

Thank you for your letter
and your support.

- **Broadcasting** 1st-4th April; 11th August-31st December 1988 and from 19th April 1991.
- **On the air** to demonstrate the sort of service we would like to provide from England.
- **Applications** to UK Home Office for a licence since August 1986.
- **Submission** in response to the White Paper on Broadcasting, February 1989.
- **Engineering** Surrey Electronics Limited

QSL from Irish pirate Radiofax, now being heard in North America.

Longwaves on the High Seas

Too often the lower frequencies are written off as being useless during the dog days of summer. Don't you believe it. Despite high static levels, one part of the band still delivers lots of excitement during the warmer months. I'm talking about the longwave marine band.

Even with the advent of satellite navigation and the heavy use of HF (3-30 MHz), there's still plenty to hear on this band. Many ship radio officers actually prefer using longwave just to avoid the busy HF channels. Extending from 405 to 515 kHz, this band has some things you don't normally expect to hear on longwave.

For one thing, it's the only place below 500 kHz where you'll regularly hear two-way and mobile activity, and that can be a nice change of pace from the beacon game. The principal users of the band are oil tankers, cargo ships, some passenger ships and the U.S. Coast Guard. There are also dozens of coastal (fixed) stations that dot the shores of North and South America.

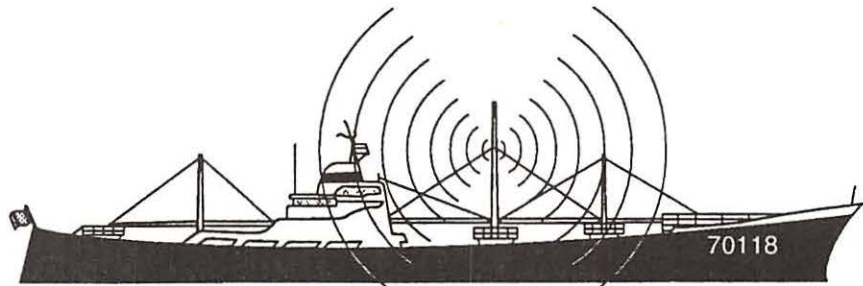
Another departure from the usual longwave fare is the increased range achieved on the marine band. One reason for this is the higher power levels used. Ships typically run 500 watts. That's 20 times more power than most NDBs (nondirectional beacons) can muster. Signals on this band also tend to skip more readily than the lower frequencies. Nighttime skip distances over 2500 miles are likely when the conditions are favorable.

Virtually all communications on this band are in CW. Most of the code is machine sent, which lends itself well to copy by computer. If you happen to be studying for one of the "code-required" ham licenses, this band is an excellent place to pick up some on-the-air practice. You'll need to use your receiver's BFO (beat frequency oscillator) for proper reception, though, since these signals are keyed-carrier CW as opposed to the modulated CW used by most NDBs.

On rare occasions, you will still hear some hand-sent code. In our fast paced world it's good to know that some things are still done the old-fashioned way. Hear it while you can, though. These brasspounders are a quickly vanishing breed.

Where to Tune

A good place to start listening is right at 500 kHz (600 meters). This is an international distress and calling frequency. Large cargo



Large ocean-going vessels are frequent visitors to the longwave band.

ships and passenger vessels operating on the open seas have equipment for 500 kHz as a part of their Safety-of-Life-at-Sea (SOLAS) system. Lifeboat radios are also equipped for this frequency as well as 2182 and 8364 kHz and can be used to send out distress calls automatically.

Besides emergency traffic, ships and coastal stations frequently use 500 kHz and also 512 kHz to establish initial contact and then move off to another frequency. The other frequency is almost always mentioned so it's easy to follow along. Unlike the HF marine band, the transmissions here are in simplex, that is, the transmit and receive frequencies are identical. This makes it even easier to tune in on the fun.

The rest of the band is sprinkled with traffic from ocean-going ships and shore stations. Among these signals, you'll hear weather bulletins complete with iceberg warnings well into summer, tense distress calls, traffic lists and requests for supplies.

**Table 1
Selected Marine Band
Stations**

Call	Shore location or ship description
WCC	Chatham, MA
CFH	Royal Canadian Navy, Halifax
KLC	Galveston, TX
WOE	Lantana, FL
WMK	West Haven, CT
WMH	Baltimore, MD
VCP	Newfoundland, St. Lawrence
KNDJ	Tanker, Union Oil Co.
KIGR	Tanker, Keystone Shipping Co.
NPCR	Coast Guard Cutter Dallas
KPH	San Francisco, CA
WPD	Tampa, FL
WNU	Slidel, LA
WLN	San Juan, PR

From my location in western New York, I regularly hear 19 different coastal stations from the Atlantic and Gulf coasts as well as some from Central and South America. Table 1 is a small sampler of ship and shore stations that you're likely to hear.

You can identify shore stations by their three-letter call signs. In the U.S., west coast stations have a K prefix and east coast stations use W, just like broadcasters. Ship call signs usually consist of four characters. Sometimes they are followed by a number, as with Liberian calls such as ELCP-7.

Understanding the Lingo

Marine band protocol is pretty straightforward but there are some peculiarities that should be explained. CQ as most of us know it, means that the sending station wants a contact with anyone hearing the transmission.

On the marine band, however, the meaning has a slightly different twist. It indicates that the transmission is meant for all to hear. CQ is frequently used before a traffic list, weather report or other notice of general interest.

Q signals are also used a lot on this band. QSY is probably the most common signal you'll hear. It means "I am listening on ____ kHz." Space limitations don't permit a complete listing of Q signals here but you will find them listed in numerous utility publications as well as the *ARRL Handbook*.

I hope this gives you some ideas for surviving the summer blues. As always, I'd enjoy hearing from you. Let me know what you're hearing and what you use for equipment. The exchange of information is what this column is all about. That's it for this month. See you in September.





THE JAPAN RADIO CO. **NRD-535**

THE NEXT GENERATION IN HIGH-PERFORMANCE HF RECEIVERS

Once again JRC breaks new ground in shortwave receiver design. The new NRD-535 has all the features SWLs and amateurs have been waiting for. General coverage from 0.1 to 30 MHz in AM, USB, LSB, CW, RTTY, FAX and Narrow FM modes. Advanced ECSS operation for phase-lock AM reception. Variable bandwidth control (BWC). Tuning accuracy to 1 Hz possible with direct digital synthesis. 200 memory channels with scan and sweep operation. Triple Superheterodyne receiving

system. Superb sensitivity, selectivity and image rejection. Dual-width noise blanker eliminates impulse noise. Squelch, RF Gain, Attenuator, AGC and Tone controls. Optional RTTY demodulator available. 24 hour clock/timer. Easy to read vacuum fluorescent display with digital S-meter. AC and DC operation. Plus the most comprehensive computer interface found on any radio to date. Call or write today for a full color brochure, price list and dealer information.



Japan Radio Co., Ltd.

MAIN OFFICE: Akasaka Twin Tower (Main), Akasaka 2-chome, Minato-ku, Tokyo 107, JAPAN
Tel.: (03) 584-8836 Telex: 242-5420 JRCTOK J

IN U.S.A.: 430 Park Avenue (2nd Floor), New York, NY 10022
Tel.: (212) 355-1180 FAX: (212) 319-5227 Telex: 961114 JAPAN RADIO NYK

The Infotech M1000

Nowadays just about every ham and SWL owns or uses a computer in his or her shack. I haven't seen any recent surveys but I would guess that, due to price reductions caused by competition, the most popular computer is an IBM or IBM clone.

Because of the IBM's popularity, software and hardware is also readily available. The Universal M1000 is an IBM plug compatible PC board that fits inside the computer and eliminates the need for a radio modem like the Universal M7000. With the M1000, your computer can become an all mode, receive only, decoder that can copy just about any mode that the more expensive M7000 can handle. In fact, it can copy FAX much better and it can give you the option of saving your pictures or even text to a floppy disk.

One drawback is that your computer needs at least an EGA monitor to copy FAX. The minimum requirement for the RTTY software is monochrome or CGA.

The M1000 comes with the PC board, a very good instruction book, a 3-1/2 inch and two 5-1/4 inch floppy disks. You have to provide the connection from the receiver to the connector on the rear panel of the M1000. You can probably find just about any kind of adapter at your local Radio Shack.

Putting it to the test

The first thing I did after installing the unit was to copy RTTY on the ham bands. In this case I already knew the baud and shift. The decoder software was very easy to use and if you have a problem, an on screen help bar is displayed on the bottom of the monitor.

I also had my Universal M7000 turned on so that I could compare the text with the M1000 which appeared to be running neck and neck. There were a few characters that M1000 missed that the M7000 didn't. But all in all the M1000 did a very respectable job.

In the software you can select other modes such as ASCII, Morse Code, SITOR, ARQ-E and ARQ-E3, TDM2 and TDM4 and Packet. There is also the databit mode and a scope mode. The scope mode is similar to an oscilloscope in that it displays a trace that is digitally shown on the computer monitor.

Other features include auto tune, filter bandwidth adjustments, memories for storing mode settings, on screen tuning and printer control.

Next I tuned in a FAX signal and ran the FAX software. I had a little problem selecting some of the functions but after reading the manual again, I understood how to load a FAX picture that was supplied with the disk. I was impressed with the resolution and came to the conclusion that it's much better at displaying FAX than the M7000. The color feature displayed dazzling pictures.

I copied NAM in Norfolk, Virginia, a strong signal on 8080 kHz. The resolution was very good even on the printer, a Hewlett Packard DeskJet (see Figure 1). I was unable to copy a FAX picture on 18433 kHz from Reuters in Buenos Aires but I'll keep trying and show the results at a later date.

The Ultimate Test

For the most part, the audio filters in any RTTY terminal unit, packet modem or FAX decoder determines the performance. I have received many letters from people asking which unit is better and are there filters that can improve RTTY reception?

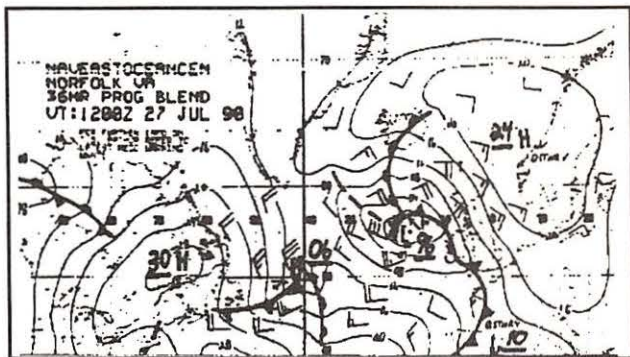


Figure 1: FAX from NAM, (Norfolk, VA) copied by the M1000.

Filters may or may not be the problem. It may be a question of, "If you can't hear them, you can't copy them."

I decided to set up a test fixture to measure signal to noise performance of the M1000 and M7000. I also included other models such as the Kantronics KAM and the PK232. Before I started the test, I had to set my own set of rules because I didn't have the expensive equipment to do the job according to industry standards.

Using a Hewlett Packard 400FL ac volt meter, a Digitech Data generator, a homemade FSK oscillator/noise generator and a homemade bandpass filter, I was able to do a test that would compare the four units.

Signal to Noise or Bit Error Rate performance is a measurement of how much noise it takes to generate errors in the data at a given signal level. Simply stated, when you copy a RTTY signal and the noise starts to increase, at what noise level will you get errors in the copied text and how many errors are there?

Because I didn't have a "BERT" (Bit Error Rate Tester) I decided to set my own rule for determining what's known as the noise threshold level which would be the standard for my test. My rule is, if I received one to five character errors on a single line of text, it would be called the error threshold.

I set up the equipment by connecting the data generator to the FSK oscillator/noise generator. I set up the data generator and sent the Quick Brown Fox message to the UUT (Unit Under Test). I then set the FSK oscillator to a fixed level as indicated by the ac voltmeter. I used -10 dB as a reference. I then raised the noise level until I got one to five errors in the QBF message. I measured the noise with the same ac voltmeter using the bandpass filter which was set up for the same shift that I was copying.

Table 1 shows the difference of noise level to the oscillator signal in dB (decibel). The smaller the number, the better the unit's performance.

If you own a PC and you are looking for a medium priced receive only radio modem, the M1000 is worth looking into. In most cases, it will outperform some of the ham radio RTTY units on the market and it's well documented and simple to use.

The M1000 can be purchased from Universal SW 1280 Aida Drive, Reynoldsburg, Ohio 43068, Phone 800-431-3939, \$399.95 plus \$5 shipping and handling.

NNN

TABLE 1: Noise Threshold Performance

UUT	BAUD/SHIFT	BAUD/SHIFT	BAUD/SHIFT
M7000	50/170	75/170	300/200
M1000	10 dB	14.5 dB	15 dB
PK-232	13.5 dB	16 dB	16 dB
KAM	14 dB	13.5 dB	17.5 dB
	17 dB	16.5 dB	17.5 dB *

* The M7000 was the best at 50 and 300 baud but the PK-232 performed better at 75 baud. The KAM was the worst. It required a higher signal level and there was a problem with ASCII mode, the characters weren't decoded properly and the text was scrambled but consistent. The 300 baud test used ASCII mode. The filter performance using 300 baud ASCII is the same for packet.

AIRCRAFT CONTROL

Coast Guard Helicopter 6587 (HH-65A) 156.8/157.15 MHz. Full data verified letter and photo of helicopter, without verification signer. Received in 22 days for an English utility report and mint first class postage. This QSL was for an enroute mission to Scott Key Burn Center, Baltimore, with a burn patient from M/V Bow Cedar (chemical tanker). Aircraft address: c/o USCG Group Cape May, Cape May, NJ 08204-5082. (Hank Holbrook, Dunkirk, MD)

AUSTRALIA

Radio Australia, 9580 kHz. Full data verified letter and scenery postcard, without verification signer. Received in 40 days for an English reception report and a souvenir postcard. Station address: P.O. Box 755, Glen Waverly, VIC 3150, Australia. (Lloyd Van Horn, New Orleans, LA) (Patrick Barry, Mission Viejo, CA)

AUSTRIA

Radio Austria International, 9875 kHz. Full data QSL letter, without verification signer. Received in 54 days for an English report. Station address: A-1136 Vienna, Austria. (Ed Mayberry, Cedar Park, TX) (Michael Lesko, Springfield, MO) (Sam Wright, Biloxi, MS)

DODECANESE ISLAND

Voice of America Rhodes relay station, 11960 kHz. Full data White House scenery card, without verification signer. Received in 55 days for an English report. Station address: 330 Independence Ave. SW, External Affairs, Washington, DC 20547. (Richard M. Earnhardt, Charlotte, NC)

FRANCE

Radio France International, 17620 kHz. Full data QSL and program schedule, without verification signer. Received in 22 days for an English report. Station address: Boite Postal 9516, Paris, France. (Mayberry, TX) (Barry, CA) (Lesko, MO) (Wright, MS)

GERMANY

Deutsche Welle, 6120/6040 kHz. Full data "German Unity" QSL card with pennant, sticker and magazine. Received in 51 days for an English report. Station address: Postfach 10 04 44, 5000 Köln 1, Germany. (Mayberry, TX) (John Vercellino, Downers Grove, IL)

HAITI

4VEC, 840 AM. Radio 4VEH-the Evangelistic Voice of Haiti. Full data QSL card, verified by Jean Van Dervant, QSL secretary. Received in 76 days for an English AM report. Station address: P.O. Box 1, Cape Haitien, Haiti. (Holbrook, MD)

LEBANON

The King of Hope, 6280 kHz. Full data QSL card, verified by vice president of engineering. Received in 46 days for an English report, and mint postage. Station address: High Adventure Ministries, c/o Paul N. Hunter, P.O. Box 7466, Van Nuys, CA (1409. (Earnhardt, NC)

LUXEMBOURG

Radio Luxembourg, 15330 kHz. Full data QSL card, without verification signer. Received in 17 days for an English report. Station address: CLT-RLT, L-2850 Luxembourg. (Mayberry, TX)

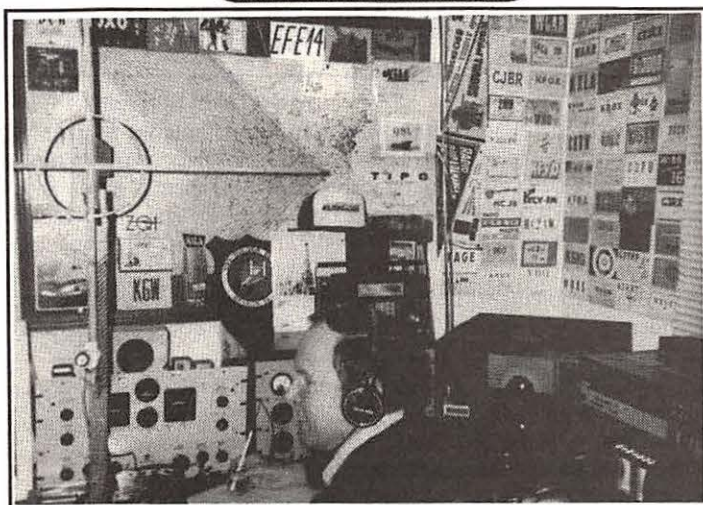
NEW ZEALAND

Radio New Zealand, 17770 kHz. Full data QSL and schedule/pennant, without verification signer. Received in 26 days for an English report. Station address: P.O. Box 2092, Wellington, New Zealand. (Mayberry, TX) (Barry, CA) (Wright, MS)

SHIP TRAFFIC

ALBERTA-SYNP (cargo) 500 kHz. Full data letter with information sheet on transmitter. Received in 68 days for an English utility report and one U.S. Dollar. Ship Address: Pegasus Ocean Services, Ltd., 12 Heron Quay, Murch Wall, London, U.K. E14 9XN (Holbrook, MD)

Monitoring Post



Frequent contributor Hank Holbrook in his den.

NEPTUNE PHOENIX-S6BN (crude oil tanker) 500 kHz. Full data prepared QSL card and photos of ship, and its radio room. Received in 38 days for an English utility report and one U.S. dollar. Ship address: Neptune Orient Lines, 456 Alexandra Road 06-00, NOL Building, Singapore 0511, Republic of Singapore. (Holbrook, MD)

CCGS HENRY LARSEN-CGHL (AGB ice breaker) 500 kHz. Full data prepared QSL card. Received in 25 days for an English utility report and mint first class postage. Ship address: c/o Canadian Coast Guard, Dartmouth, NS, Canada. (Holbrook, MD)

KOPER EXPRESS-YTTJ (container) 156.65 MHz. Full data prepared QSL card verified with ship brochure and photo enclosed. Received in 68 days for an English utility report and one U.S. dollar. Ship address: Jogolinija, Palaca Jadran, Obala Jugoslavenske Mornarice 16, Post Pretinac 379, 51001 Rijeka, Yugoslavia. (Holbrook, MD)

NOSACRANGER-WRYG (auto carrier) 156.65 MHz. Full data prepared QSL card verified with WTIG ham card and ship photo. Received in 27 days for an English utility report and mint first class postage. Ship address: Pacific Gulf Marine, Inc., 3010 Gen. DeGaulle Blvd. Suite 100, P.O. Box 6479, New Orleans, La. (Holbrook, MD)

ZIM HAIFA-4XMX (container) 500 kHz. Full data letter and photo of ship. Received in 21 days for an English utility report and mint first class postage. Ship address: Zim American Shipping Co. Inc., One World Trade Center, Suite 2969N, New York, NY 10048. (Holbrook, MD)

SOUTH AFRICA

Radio RSA, 7270 kHz. Full data Table Mountain QSL card without verification signer. Received in 32 days for an English report. Station address: Box 4559, Johannesburg 2000, South Africa. (Mayberry, TX) (Mark Fields, Portland, OR)

UNITED ARAB EMIRATES

U.A.E. Radio-Dubai, 13675/15400 kHz. Full data Great Circle QSL card, frequency schedule and pennant. Received in 54 days for an English report. Station address: P.O. Box 1695, Dubai, United Arab Emirates. (Mayberry, TX) (John Dykes, Hopkins, SC) (Vercellino, IL)

UNITED STATES

Radio Cincinnati, Inc., WCM-6515.7 kHz. Full data prepared QSL card, verified by Tony Garofalo, communications manager. Received in seven days for an English utility report and a self-addressed stamped envelope. Station address: P.O. Box 1460, Cincinnati, OH 45201. (Russ Hill, Oak Park, MI)

SPA Creek Draw Bridge, Annapolis, Maryland, 156.65 MHz. Full data prepared QSL card, verified by P.R. Ulrich. Received in 10 days for an English utility report and mint first class postage. Address: c/o Maryland Department of Transportation, State Highway Administration, P.O. Box 717, Baltimore, MD 21203-9717. (Holbrook, MD)

WDAF-Kansas City, Missouri, 610 kHz AM. Full data QSL letter and coverage map, verified by John Collinson, C.E. Received in 65 days for an English AM report and a self-addressed stamped envelope. Station address: WDAF-AM, 3020 Summit, Signal Hill, Kansas City, MO 64108. (Vercellino, IL)

WSSJ-Camden, New Jersey, 1310 AM. Full data prepared QSL card, verified by Pat Delsi, general manager. Received in 96 days for an English AM report and mint first class postage. Station address: Sixth and Market St. Camden, NJ 08101. (Holbrook, MD)

WVL-New Orleans, Louisiana, 870 AM. Full data prepared QSL card and coverage map, verified by Robert L. Dunn, engineer and QSL manager. Received in 30 days with a note apologizing for the delay. Station address: 1450 Poydras Ave., Suite 440, New Orleans LA 70112. (Vercellino, IL)

USSR

Radio Moscow, 9685/6000 kHz. Full data QSL card and station souvenirs. Received in 37 days for an English report, mint first class postage and three IRCs. Station address: Moscow, USSR. (James Hanan, Oklahoma City, OK) (Dykes, SC) (Barry, CA) (Fields, OR)

NextDay Reception Reports

Two-Color Printing
Rainbow Cardstock
100 200 300
\$19.95 \$24.95 \$29.95
Specify • Receiver
• Antenna
• Your 40-Word
Personal Message
• Command Attention • Send Clear Reports • Speed Replies • Save Time •
Box 50062-M • Provo, UT 84605 • AntennasWest

how to use the shortwave guide

A NOTE FOR THE AUGUST ISSUE:

We have switched in one month's time from maintaining the shortwave guide in a database instead of a text file. This will prove an enormous time saver to our frequency manager; however, we were not successful in removing all the bugs before print deadline.

You will find there are no station locations listed. If there is doubt about a station's identification, we recommend you refer to a previous issue (Radio 1 and Radio 2, for example, are located in Accra, Ghana, in most cases).

You will also find frequency listings cut off after reaching 20 frequencies. For a few stations that will mean additional frequencies are missing.

Both of these problems will have been resolved by the September issue, and we are enthusiastic about the improvements that are already evident in using our new program, designed by Bob Cheek of RAC Publications.

The shortwave guide of *Monitoring Times* is a professional level tool designed to help you hear more stations. You'll find three main elements: frequencies, propagation charts, and programming. The frequencies will tell you where to tune; the propagation charts will help you to use your listening time more effectively by predicting the likelihood of hearing a station from a particular part of the world; and the programming section will give you some idea of what to expect when you tune the station in.

The frequency section now includes virtually every English language transmission in the world including those directed to other parts of the world as well as North America. Do not be disappointed if you do not hear some of these on your first time out. Their level of difficulty ranges from "middling" to, literally, "once-in-a-lifetime." If such challenges frustrate you, stick to the frequencies directed solely to your target area.

The first four digits of a listing are the start time in UTC or "Universal Time Coordinated." Because this so-called "world time" can be confusing, we have provided corresponding local time for the Eastern ("EDT") and Pacific ("PDT") time zones.

The space between the transmission end and the name of the station is the broadcast schedule. If there is no entry here (as is most often the case), the transmission is made every day. In other cases, the following letters represent the days of the week the transmission can be heard:

s(Sunday)	s(Thursday)
m(Monday)	f(Friday)
t(Tuesday)	a(Saturday)
w(Wednesday)	

Other schedule codes are "ten" which means that the schedule is tentative, "tes" which means that it is a test transmission and "war" which means that the station's schedule has been disrupted by armed conflict.

Frequencies are listed in ascending order, from lowest to highest. We suggest that you begin with the lowest frequency and work your way up to the highest frequency. Of course, keep in mind that the lower frequencies generally work better at night; the higher ones during the day. Not all frequencies will be audible at any given time.

Shortwave, or "world band" transmissions are often targeted to specific areas of the world. Following each frequency is a code indicating the area of the globe to which the frequency is "officially" directed. While such a scheme often gives listeners a fair idea of the likelihood of receiving a particular broadcast, remember that in shortwave, there are no hard and fast rules. Voice of America shows sent to Africa in our late evening, for example, are easily heard in North America. Do not hesitate to try and hear any transmission listed in this section.

For easy-going, look for frequencies directed to:

na (North America)
ca (Central America or Caribbean)
am (Americas)

Other codes include:

af (Africa) as(Asia)
as (Asia) as (Australia)
eu (Europe) me (Middle East)
pa (Pacific) sa (South America)

If a transmission is directed to North America and some other area, we list it as North America-bound. If it is directed to a number of different (non-American) targets, we list it as "va" (various). Transmissions marked "do" are for domestic or local consumption. Again, it is possible that you can hear these. Finally, you will occasionally see a transmission listed as "om" (omnidirectional sent out in all directions simultaneously), or "???" (we don't know where it is supposed to be going).

Remember, this is a list of all English language transmissions to the world. It includes not only the powerhouse, easy-to-hear stations from the United States, Canada, Germany and the Soviet Union, but tiny local broadcasters like the 40 watt Tristan Radio, located on a tiny island located in the middle of the South Atlantic. Your chances of hearing such a station are, quite frankly, near nil.

Desiring, however, to provide you with every possible tool so that you can effectively search out such rare fare, we also include propagation charts with this section. These are found at the conclusion of the frequency/program list and are designed to give you an idea of the best time to try for a particular station or region. Instructions for using the propagation charts are found at the beginning of that section.

A list of suggested programs can be found under the frequencies for most hours. They are listed in order of their start time in UTC. This list of programs changes every month in order to give you a wide familiarity with what shortwave's over 1,100 frequencies can bring you.

Please note that some program listings may be followed by "See X 0000. The letter stands for a day of the week (see day code legend for the frequency section). The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

Remember that, unlike many other publications, *Monitoring Times* makes changes to this list up to two weeks before press time and is thus able to keep this list among the most accurate in the world. Errors will naturally occur and we ask your assistance in correcting them.

You may address your corrections, additions and suggestions to Frequency Manager (or Program Manager if program details), P.O. Box 98, Brasstown, NC 28902. You may also fax changes to us at 1-704-837-2216 24 hours a day.

MT Monitoring Team**Greg Jordan**, Frequency Manager*P.O. Box 98**Brasstown, NC 28902***Dave Datko***California***Jack Hubby***California***B. W. Battin***New Mexico***Tammy Wells***Maine***Stephen Price***Pennsylvania***Kannon Shanmugam**

Program Manager

*P.O. Box 98**Brasstown, NC 28902***John Carson***Oklahoma***Jim Frimmel***Texas***newsline**

"Newsline" is your guide to news broadcasts on the air. ■ All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. ■ All broadcasts are daily unless otherwise noted by the day codes.

0000 UTC
(8:00 PM EDT, 5:00 PM PDT)

BBC
CBC, Northern Quebec
Christian Science Monitor
Kol Israel
Radio Australia
Radio Beijing
Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Korea
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Prague Int'l
Radio Thailand
Radio Yugoslavia
Spanish Foreign Radio
Voice of America
WWCR [T-A]
0005
Radio Pyongyang
0010
Radio Beijing*
0030
Christian Science Monitor (Asia)
[M]
Christian Science Monitor [T-F]
HCJB*
Radio Budapest
Radio Havana Cuba [T-S]
Radio Moscow
Radio Netherlands [T-S]
Radio New Zealand Int'l [M-F]
Voice of America (Americas,
East Asia) (Special English) [T-S]
Voice of America (East Asia)
(Special English) [M]
0045
Radio Korea (News Service)
0055
WRNO [W, A]

0100 UTC
(9:00 PM EDT, 6:00 PM PDT)

All India Radio
BBC
CBC, Northern Quebec [S-M]
Christian Science Monitor
Deutsche Welle
Kol Israel
Radio Australia
Radio Belize
Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Thailand
Radiotelevisione Italiana
Spanish Foreign Radio
Voice of America
Voice of Indonesia
WWCR [T-A]
0115
Radio Havana Cuba* [T-S]
0125
HCJB
0130
Christian Science Monitor (Asia)
[M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Moscow
Radio Portugal [T-A]
Voice of Greece [M-A]
0155
Voice of Indonesia

0200 UTC
(10:00 PM EDT, 7:00 PM PDT)

BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Radio Australia

Radio Canada Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Romania Int'l
Radio Thailand
RAE, Buenos Aires [T-A]
Swiss Radio Int'l
Voice of America
Voice of Free China
Voice of Myanmar
WWCR [T-A]
0215
Radio Cairo
0230
Christian Science Monitor
(Africa, Europe) [M]
Christian Science Monitor [T-F]
HCJB*
Radio Havana Cuba [T-S]
Radio Moscow
Radio Pakistan (Special English)
Radio Tirana, Albania
0245
Radio Korea (News Service)
0250
Radio Yerevan

0300 UTC
(11:00 PM EDT, 8:00 PM PDT)

BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Beijing
Radio Belize
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Sofia
Radio Thailand
Voice of America
Voice of Free China

Voice of Turkey
WRNO [F]
WWCR [T-S]
0309
BBC*
0310
Radio Beijing*
0315
Radio Cairo
Radio Havana Cuba* [T-S]
0320
Radio For Peace Int'l [T-A]
0325
HCJB
0330
BBC (Africa)*
Christian Science Monitor
(Africa, Europe) [M]
Christian Science Monitor [T-F]
Radio Havana Cuba [T-S]
Radio Moscow
Radio Netherlands [T-S]
Radio Tirana, Albania
UAE Radio, Dubai
0340
Voice of Greece [M-A]
0350
Radiotelevisione Italiana
0355
Radio Japan [M-F]
WYFR (Network) [T-A]

0400 UTC
(12:00 AM EDT, 9:00 PM PDT)

BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Kol Israel
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Romania Int'l
Radio RSA

Radio Tanzania
Radio Thailand
Swiss Radio Int'l
Voice of America
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
Christian Science Monitor
(Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Botswana
Radio Havana Cuba [T-S]
Radio Moscow
Radio Tirana, Albania
0450
Radio For Peace Int'l [T-A]
Radio RSA

0500 UTC
(1:00 AM EDT, 10:00 PM PDT)

BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
HCJB*
Radio Australia
Radio Beijing
Radio Havana Cuba [T-S]
Radio Japan
Radio Lesotho
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Thailand
Spanish Foreign Radio
Voice of America
0510
Radio Beijing*
Radio Botswana
0515
Radio Canada Int'l [M-F]
Radio Havana Cuba* [T-S]

newsline

0530
 BBC (Africa)*
 Christian Science Monitor
 (Africa, Europe, NE Asia) [M]
 Christian Science Monitor [T-F]
 Radio Austria Int'l
 Radio Havana Cuba [T-S]
 Radio Moscow
 Radio Romania Int'l
 Radio Thailand
 UAE Radio, Dubai
 Voice of Nigeria
0540
 Radio Prague Int'l
0545
 Voice of Nigeria*
0555
 HCJB

0600 UTC
(2:00 AM EDT, 11:00 PM PDT)

BBC
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Havana Cuba [T-S]
 Radio Moscow
 Radio New Zealand Int'l [M-A]
 Voice of America
0605
 Radio Pyongyang
0610
 Voice of Malaysia
0630
 BBC (Africa)*
 BRT, Brussels
 Christian Science Monitor [M-F]
 Radio Finland [M-A]
 Radio Havana Cuba [T-S]
 Radio Moscow
 Radio Polonia
 Radio Prague Int'l
 Radio Sofia
 Radio Tirana, Albania
 RTV Congolaise, Brazzaville [M-F]
 Swiss Radio Int'l
 Voice of Nigeria
0645
 Radio Romania Int'l
 Voice of Nigeria*

0700 UTC
(3:00 AM EDT, 12:00 AM PDT)

BBC
 Christian Science Monitor
 Radio Australia
 Radio Havana Cuba [T-S]
 Radio Japan
 Radio Moscow
 Radio New Zealand Int'l [M-F]
 Radio Tirana, Albania
 Voice of Free China
 Voice of Myanmar
0715
 Radio Havana Cuba* [T-S]
0730
 BBC (Africa)* [M-A]
 Christian Science Monitor [M-F]
 HCJB*

Radio Austria Int'l
 Radio Havana Cuba [T-S]
 Radio Moscow
 Radio Netherlands [M-A]
0755
 Radio Japan [M-F]

0800 UTC
(4:00 AM EDT, 1:00 AM PDT)

BBC
 Christian Science Monitor
 Radio Australia
 Radio Finland [M-F]
 Radio Korea
 Radio Moscow
 Radio New Zealand Int'l
 Voice of Indonesia

0805
 Radio Pyongyang

0810
 Voice of Malaysia

0825
 HCJB
0830
 Christian Science Monitor [M-F]
 Radio Finland [T-A]
 Radio Moscow
 Radio Netherlands [M-A]
 Swiss Radio Int'l
0840
 Voice of Greece [M-A]
0850
 Radio For Peace Int'l [T-A]
0855
 Radio Finland [M-F]
 Voice of Indonesia

0900 UTC
(5:00 AM EDT, 2:00 AM PDT)

BBC
 BRT, Brussels [M-A]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio Japan
 Radio Moscow
 Radio New Zealand Int'l [S-F]
0910
 Radio Beijing*
0915
 Radio Korea (News Service)
0930
 Christian Science Monitor [M-F]
 Deutsche Welle (Africa)* [M-F]
 Radio Moscow
0955
 Radio Japan [M-F]

1000 UTC
(6:00 AM EDT, 3:00 AM PDT)

All India Radio
 BBC
 Christian Science Monitor
 HCJB*
 Kol Israel
 Radio Australia
 Radio Beijing
 Radio Moscow

Radio New Zealand Int'l
 Radio Tanzania
 Swiss Radio Int'l
 Voice of America
1010
 Radio Beijing*
1020
 Radio For Peace Int'l [T-A]
1030
 Christian Science Monitor [M-F]
 Radio Austria Int'l [M-F]
 Radio Korea
 Radio Moscow
 Radio Netherlands [M-A]
 UAE Radio, Dubai
1040
 Voice of Greece [M-A]
1055
 All India Radio
 HCJB

1100 UTC
(7:00 AM EDT, 4:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio Japan
 Radio Jordan
 Radio Korea
 Radio Moscow
 Radio New Zealand Int'l
 Radio RSA
 Swiss Radio Int'l
 TWR, Bonaire [M-F]
 Voice of America
 WWCR [M-F]
1105
 Radio Pakistan (Special English)
 Radio Pyongyang
1109
 BBC*
1110
 Radio Beijing*
 Radio Belize [T-A]
 Radio Botswana [M-F]
1115
 Radio Korea (News Service)
1125
 Radio Belize [M]
 Radio Botswana [A-S]
1130
 BRT, Brussels [S]
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 Radio Austria Int'l [M-F]
 Radio Finland [T-F]
 Radio Lesotho
 Radio Moscow
 Radio Netherlands [M-A]
1135
 Radio Thailand
1150
 Radio RSA
1155
 Radio Japan [M-F]

1200 UTC
(8:00 AM EDT, 5:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Bras, Brasilia [M-A]
 Radio Canada Int'l [M-F]
 Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Polonia
 Radio Romania Int'l
 Radio Tashkent
 Radio Thailand
 Radio Yugoslavia
 Swiss Radio Int'l
 Voice of America
 WWCR [M-F]
1210
 Radio Beijing*
1215
 Radio Korea
1230
 Christian Science Monitor [M-F]
 Radio Cairo
 Radio Finland [M-F]
 Radio France Int'l
 Radio Moscow
 TWR, Bonaire [A]
 Voice of Turkey
1235
 Voice of Greece
1255
 WYFR (Network) [M-F]

1300 UTC
(9:00 AM EDT, 6:00 AM PDT)

BBC ("Newshour")
 BRT, Brussels [M-A]
 CBC, Northern Quebec
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Belize
 Radio Canada Int'l [S]
 Radio Finland [A]
 Radio Jordan
 Radio Moscow
 Radio Peace and Progress
 Radio Romania Int'l
 Radio Tanzania [A-S]
 Radio Tirana, Albania
 TWR, Bonaire [S-F]
 Voice of America
 WWCR [M-F]
1305
 Radio Pyongyang
1310
 Radio Beijing*
1325
 HCJB [M-F]
1328
 Radio Cairo
1330
 All India Radio
 Christian Science Monitor [M-F]
 Radio Austria Int'l
 Radio Canada Int'l
 Radio Finland [S-F]

Radio Korea (News Service)
 Radio Moscow
 Radio Tashkent
 Swiss Radio Int'l
 UAE Radio, Dubai
 Voice of America (Special English)
1346
 All India Radio (UN News) [A]

1400 UTC
(10:00 AM EDT, 7:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Belize [M-F]
 Radio Canada Int'l
 Radio France Int'l
 Radio Japan
 Radio Korea
 Radio Moscow
 Voice of America
 WWCR [M-F]
1405
 Radio Finland
 Radio Pyongyang
1410
 Radio Beijing*
1425
 HCJB [M-F]
1430
 Christian Science Monitor [M-F]
 Radio Austria Int'l [M-F]
 Radio Moscow
 Radio Netherlands [M-A]
 Radio Polonia
 Radio Sofia
1445
 BBC (East Asia) (Special English) [M-F]
 Voice of Myanmar
1455
 All India Radio

1500 UTC
(11:00 AM EDT, 8:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio Belize [M-A]
 Radio Canada Int'l
 Radio Japan
 Radio Jordan
 Radio Moscow
 Radio Portugal [M-F]
 Radio Romania Int'l
 Radio RSA
 Voice of America
1505
 Radio Pyongyang
1510
 Radio Beijing*
1530
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]

newslines

FEBA, Seychelles

Radio Moscow

Radio Tirana, Albania

Swiss Radio Int'l

Voice of Greece [M-A]

1545

Radio Korea (News Service)

1600 UTC

(12:00 PM EDT, 9:00 AM PDT)

BBC

CBC, Northern Quebec [A]

Christian Science Monitor

Deutsche Welle

Radio Australia

Radio Beijing

Radio Canada Int'l

Radio France Int'l

Radio Jordan

Radio Korea

Radio Lesotho

Radio Moscow

Radio Polonia

Radio RSA

Radio Tanzania

Voice of America

WWCR [M-F]

1609

BBC*

1610

Radio Beijing*

Radio Botswana [M-F]

1630

Christian Science Monitor [M-F]

Radio Austria Int'l

Radio Moscow

Radio Netherlands [M-A]

Radio Peace and Progress

Radio Polonia

UAE Radio, Dubai

Voice of America (except Africa)

(Special English)

WYFR (Network) [A]

1635

WYFR (Network) [M-F]

1700 UTC

(1:00 PM EDT, 10:00 AM PDT)

BBC

CBC, Northern Quebec [A]

Christian Science Monitor

Kol Israel

Radio Australia

Radio Beijing

Radio Belize [M-F]

Radio Canada Int'l

Radio Japan

Radio Moscow

Radio Prague Int'l

Radio RSA

Voice of America

1705

Radio Pyongyang

1709

BBC (Africa)* [A-S]

1710

Radio Beijing*

1715

Radio Korea (News Service)

1725

WYFR (Network) [A]

1730

BRT, Brussels

Christian Science Monitor [M-F]

Radio Moscow

Radio Romania Int'l

Radio Sofia

Swiss Radio Int'l

1740

BBC (Africa)* [M-F]

1750

Radio RSA

1800 UTC

(2:00 PM EDT, 11:00 AM PDT)

All India Radio

BBC

CBC, Northern Quebec [M-F]

Christian Science Monitor

KVOH (UPI News)

Radio Australia

Radio Belize [M-F]

Radio Bras, Brasilia [M-A]

Radio Canada Int'l

Radio Korea

Radio Moscow

Radio New Zealand Int'l [S-F]

Radio Tanzania

Voice of America

WWCR [A]

1803

Radio Jamahiriya, Libya

1830

Christian Science Monitor [M-F]

Radio Belize

Radio Budapest

Radio Finland

Radio Moscow

Radio Netherlands [M-A]

Radio Polonia

Radio Prague Int'l

Radio Sofia

Radio Tirana, Albania

Radio Yugoslavia

Swiss Radio Int'l

Voice of America (Special English)

1840

SLBC, Sri Lanka

Voice of Greece

1847

Radio Jamahiriya, Libya

1855

BBC (Africa)* [M-F]

WYFR (Network) [M-A]

1900 UTC

(3:00 PM EDT, 12:00 AM PDT)

All India Radio

BBC

Christian Science Monitor [M-A]

Deutsche Welle

HCJB*

Kol Israel

KVOH (UPI News)

Radio Australia

Radio Beijing

Radio Canada Int'l

Radio Havana Cuba [M-A]

Radio Japan

Radio Moscow

Radio New Zealand Int'l [S-F]

From Moscow To Montreal...

Radio Moscow returns! To the program listings, that is; after a one-year absence, Radio Moscow's back in the program listings of the "Shortwave Guide." The station has become rather niggardly about sending out schedules lately, and their printed schedules haven't exactly been 100% accurate, so please bear with us if there are any errors. Also, remember that the World Service has canceled four hours of programming and replaced it with simulcasts of the North American Service.

Radio Canada Int'l is also back in the program listings. The CBC programs that are now broadcast in the place of the old RCI programs are included in full.

If there's a station you'd like to see in the program listings, drop us a line. The address is P.O. Box 98, Brasstown, NC 28902.

Radio Tanzania

RAE, Buenos Aires [M-F]

Spanish Foreign Radio

Swiss Radio Int'l

Voice of America

1910

Radio Beijing*

Radio Botswana

1920

Voice of Greece

1930

Christian Science Monitor [M-F]

Deutsche Welle* [M-F]

Radio Austria Int'l

Radio Havana Cuba [M-A]

Radio Moscow

Radio Romania Int'l

1935

Radiotelevisione Italiana

1945

Radio Korea (News Service)

1955

HCJB

Radio Finland

2000 UTC

(4:00 PM EDT, 1:00 PM PDT)

BBC

CBC, Northern Quebec [S-F]

Christian Science Monitor

KVOH (UPI News)

Radio Australia

Radio Beijing

Radio Belize [M-F]

Radio Havana Cuba [M-A]

Radio Kiev

Radio Moscow

Radio New Zealand Int'l [S-F]

Radio Polonia

Radio Portugal [M-F]

Radio Prague Int'l

Voice of America

Voice of Indonesia

Voice of Turkey

2005

Radio Pyongyang

2010

Radio Beijing*

2025

Radio Havana Cuba* [M-A]

Radiotelevisione Italiana

WYFR (Network) [M-F]

2030

Christian Science Monitor [M-F]

Radio Budapest

Radio Havana Cuba [M-A]

Radio Korea

Radio Moscow

Radio Netherlands [M-A]

Radio Sofia

WYFR (Network) [A]

2045

Radio Korea (News Service)

2055

Voice of Indonesia

2100 UTC

(5:00 PM EDT, 2:00 PM PDT)

All India Radio

BBC ("Newshour")

BRT, Brussels

CBC, Northern Quebec [S-F]

Christian Science Monitor [M-A]

Deutsche Welle

KVOH (UPI News)

Radio Australia

Radio Beijing

Radio Belize [M-F]

Radio Canada Int'l

Radio Japan

Radio Moscow

Radio New Zealand Int'l [S-F]

Radio Peace and Progress

Radio Portugal [M-F]

Radio Prague Int'l

Radio Romania Int'l

Radio Yugoslavia

Spanish Foreign Radio

Swiss Radio Int'l

Voice of America

WWCR [M-F]

2110

Radio Beijing*

2130

Christian Science Monitor [M-F]

Kol Israel

Radio Cairo

Radio Canada Int'l

Radio Finland

Radio Moscow

Radio Sofia

Radio Vilnius

Swiss Radio Int'l

WYFR (Network) [M-F]

2150

Radio For Peace Int'l [M-F]

2155

WYFR (Network) [M-A]

2200 UTC

(6:00 PM EDT, 3:00 PM PDT)

All India Radio

BBC

CBC, Northern Quebec [M-F]

Christian Science Monitor

Radio Australia

Radio Beijing

Radio Canada Int'l

Radio Havana Cuba [M-A]

Radio Moscow

Radio New Zealand Int'l

Radio Vilnius

Radiotelevisione Italiana

Voice of America

Voice of Free China

Voice of Turkey

2208

Voice of America (Caribbean)*

[M-F]

2210

Radio Beijing*

2225

Radio Havana Cuba* [M-A]

2230

Christian Science Monitor [M-F]

Radio Havana Cuba [M-A]

Radio Moscow

Radio Polonia

Radio Tirana, Albania

Voice of America (Special English)

2233

Radio Jamahiriya, Libya

2245

Voice of Greece

2300 UTC

(7:00 PM EDT, 4:00 PM PDT)

BBC

CBC, Northern Quebec [A]

Christian Science Monitor [M-A]

Kol Israel

Radio Australia

Radio Belize [M-F]

Radio Canada Int'l

Radio Finland [M-F]

Radio Japan

Radio Kiev

Radio Luxembourg

Radio Moscow

Radio New Zealand Int'l

Radio Prague Int'l

Radio Sofia

Voice of America

2305

Radio Polonia

Radio Pyongyang

2315

All India Radio

2320

Radio For Peace Int'l [M-F]

Radio Thailand

2330

BRT, Brussels

Christian Science Monitor [M-F]

Radio Budapest [M-A]

Radio Jamahiriya, Libya

Radio Moscow

Radio Tirana, Albania

2355

Radio Japan [M-F]

WRNO [W, F]

0000 UTC

[8:00 PM EDT/5:00 PM PDT]

FREQUENCIES

0000-0100	ABC Brisbane	4920do	9660do	15290na	15355na	15410na
0000-0100	ABC Perth	9610do		15425na	15480na	15550na
0000-0100	All India Radio	9535as	9910as 11715as	15570na	15580na	
		11745as	15110as	17770pa		
0000-0030	BBC London	5965as	5975na 6005sa	0000-0100 smtwhf	Radio New Zealand Int'l	17770pa
		6175na	6195as 7145as	0000-0030 stwhfa	Radio Prague	7345na 11685na 11990na
		7325na	9580as 9590na	0000-0100	Radio Pyongyang	11335na 13775na 15115na
		9915na	11750sa 11945as	0000-0100	Radio Thailand	4830as 9655as 11905as
		11955as	12095na 15070na	0000-0050	Radio Yugoslavia	9620na 11735na
		15260sa	15360pa 17830as	0000-0100	RTV Malaysia	7295do
0000-0100	CBN	6160do		0000-0100	SBC Radio 1	5010do 5052do 11940do
0000-0100	CFCX	6005do		0000-0100	SLBS	3316do
0000-0100	CFRX	6070do		0000-0100	Spanish Foreign Radio	9630na 11880na
0000-0100	Christian Science World S	7395na	9850na 13760na	0000-0100	Voice of America	5995ca 6130ca 9455ca
		17555na	17865va			9775ca 9815ca 11580ca
0000-0057	Croatian Radio	7315eu	9495eu	0000-0100	Voice of America	11695ca 15205ca
0000-0100	FEBC Radio Int'l	15490as				7120as 9770as 11760as
0000-0100	KTBN Salt Lake City	15590am				15185as 15290as 17735as
0000-0100	R. for Peace Int'l	7375na	3630na 15030na			17820as
		21566na		0000-0100	WHRI Noblesville	7315am 9495am
0000-0100	Radio Australia	11880va	11930va 3605va	0000-0100	WINB Red Lion	15145eu
		15160va	5240va 15320va	0000-0100	WRNO New Orleans	7355am
		17630va	17715va 17750va	0000-0100	WWCR Nashville	7520na
		17795va	21740va	0000-0100	WYFR	5985am
0000-0100	Radio Beijing	15285am	17705am	0030-0100	BBC London	5965as 5975na 6005sa
0000-0030 mtwhf	Radio Canada Int'l	5960na	9755na 13760na			6175na 7135as 7325na
0000-0100 sm	Radio Canada Int'l	5960na	9755na			9580as 9590na 9915na
0000-0100	Radio Havana Cuba	11950am				11750sa 11955as 12095na
0000-0100	Radio Kiev	11790na	13645na 15180na			15260sa 15360pa
		15455na	15485na 15525na	0030-0100	Croatian Radio, Zagreb	7315eu 9495eu
		15575na		0030-0100	HCJB Quito	9745am 15155am 21455am
0000-0100	Radio Korea	6090om	15350om			25950am
0000-0100	Radio Luxembourg	9480na	11690na 11710na	0030-0100	Hunan PBS	4990do
0000-0100	Radio Moscow	11730na	11780na 11850na	0030-0100	Radio Netherlands	6020am 6165am 15560am
		11985na	12005na 12050na	0030-0100	Sri Lanka B'casting Corp.	6005as 9720as 15425as
		13605na	13775na 15140na	0040-0050 twhf	R National de Venezuela	9540om
				0050-0100	Vatican Radio	6150na 9605na

SELECTED PROGRAMS

Sundays

- 0007 Radio Canada Int'l: Quirks and Quarks. Professor Jearl Walker brings science to the masses.
- 0011 Radio Moscow: Outlook. Details not available at press time.
- 0020 Radio Moscow: Feature. Topical programming on various subjects.
- 0030 BBC: The Ken Bruce Show. Ken Bruce plays pop music, past and present.

Mondays

- 0007 Radio Canada Int'l: Open House. See S 1337.
- 0011 Radio Moscow: Science And Engineering. See S 0611.
- 0025 Radio Moscow: Vasily's Weekend. See S 0131.
- 0030 BBC: In Praise Of God. Christian religious services and meditations.

Tuesdays

- 0011 Radio Moscow: Outlook. See S 0011.
- 0020 Radio Moscow: Newmarket. See S 0111.
- 0030 BBC: Panel Game. "Jazz Score" features tales from the colorful world of jazz (6th/13th); "The Litmus Test" contests reds vs. blues in a science quiz (through October 22nd).
- 0040 Radio Moscow: Update. Comments on and in-depth analysis of the latest developments worldwide.



Radio Moscow QSL from
John Carson of Oklahoma

Wednesdays

- 0011 Radio Moscow: Outlook. See S 0011.
- 0020 Radio Moscow: Newmarket. See S 0111.
- 0030 BBC: Omnibus. Topical features on almost any topic, from Dracula to drugs.
- 0040 Radio Moscow: Update. See T 0040.

Thursdays

- 0011 Radio Moscow: Outlook. See S 0011.
- 0020 Radio Moscow: Home In The USSR. See T 2340.
- 0030 BBC: Comedy Show (except August 1st: "Two Cheers For July"). See W 1530.
- 0040 Radio Moscow: Update. See T 0040.

Fridays

- 0011 Radio Moscow: Outlook. See S 0011.
- 0020 Radio Moscow: Science And Engineering. See S 0611.
- 0030 BBC: Music Feature. "The Musician's Musician" features musicians' favorite musicians (2nd/9th/16th/23rd); "The Anatomy Of Jazz" dissects the musical form of jazz (30th).
- 0040 Radio Moscow: Update. See T 0040.

Saturdays

- 0011 Radio Moscow: Outlook. See S 0011.
- 0020 Radio Moscow: Home In The USSR. See T 2340.
- 0030 BBC: From The Weeklies. A review of the British weekly press.
- 0040 Radio Moscow: Update. See T 0040.
- 0045 BBC: Recording Of The Week. See S 0315.

0100 UTC

[9:00 PM EDT/6:00 PM PDT]

FREQUENCIES

0100-0200	ABC Brisbane	4920do	9660do	12050va	13605va	13775va	15140va
0100-0200	ABC Perth	9610do		15290va	15315va	15410va	15425va
0100-0115	All India Radio	9535as	9910as 11715as	15480va	15550va	15580va	15590va
		11745as	15110as		6020am	6165am	15560am
0100-0200	BBC London	5965as	5975na 6005sa		17770pa		
		6175na	7135as 7325na 9580as		11925na	15360na	
		9590na	9915na 11750sa 11955as		5930na	7345na	11685na
		12095na	15260sa 15280as 15360pa		9765as		
		21715as			4830as	9655as	11905as
0100-0200	CBN	6160do		0100-0200 TWHFA	RAE Buenos Aires	11710na	
0100-0200	CFCX Montreal	6005do		0100-0120	RAI	9575am	11800am
0100-0200	CFRX	6070do		0100-0200 smtwh	RTV Malaysia	7 295do	
0100-0200	Christian Science World S	7395na	9850na 13760na	0100-0200	SBC Radio 1	5052do	11940do
		17555na	17865va	0100-0200	SLBS	3316do	
0100-0150	Deutsche Welle	6040na	6145na 6155na	0100-0200	Spanish Foreign Radio	9630na	11880na
		9565na	11865na 11890na 13610na	0100-0200	Sri Lanka B'casting Corp.	6005as	9720as 15425as
		13770na	15105na 15425na	0100-0105	Vatican Radio	6150na	9605na
0100-0200	FEBC Radio Int'l	15450as		0100-0200	Voice of America	5995ca	6130ca 9455ca
0100-0200	HCJB Quito	9745as	15155am 21455am			9775ca	9815ca 11580ca 15205ca
		25950am					6095va 6125va 7115as
0100-0200	KTBN Salt Lake City	7510na					7205as 11705as 15160as
0100-0200	KVOH Los Angeles	17775na		0100-0200	Voice of Indonesia		15250as 17740as 21550as
0100-0130	Nat'l Radio of Laos	7112as		0100-0200	WINB Red Lion	11752as	11785as
0100-0200	R. for Peace Int'l	7375na	13630na 15030na	0100-0200	WRNO New Orleans	7355na	
		21566na		0100-0200	WWCR Nashville	7520na	
0100-0200	Radio Australia	11880va	11930va 15160va 15240va	0100-0200	WYFR Okeechobee	6065na	11855na 15440na
		15320va	17630va 17715va 17750va	0130-0200 mwf	Alma Alta Radio	5035do	5915do 6135do
		17795va	21525va 21740va 21775va	0130-0200	Peace & Progress	11770na	11860na 15180na
0100-0130	Radio Canada Int'l	9535am	9755am 11845am			17690na	17720na
		11940am	13720am	0130-0200	R Sta Peace & Progress	6145eu	7360eu 9610eu
0100-0200 sm	Radio Canada Int'l	9535ca	9755ca 11845ca			11790am	11980am
		11940ca	13720ca	0130-0200	Radio Austria Int'l	9870sa	9875na 13730na
0100-0200	Radio Havana Cuba	15140am		0130-0200	Radio Tashkent	7335na	
0100-0200	Radio Japan	5960na		0130-0200	United Arab Emirates R.	11795na	13695eu 15320eu 15435eu
0100-0200	Radio Luxembourg	6090om		0130-0140 mtwhfa	Voice of Greece	9395am	9420am 11645am
0100-0200	Radio Moscow	9480va	11690va 11710na 11780va	0145-0200	Vatican Radio	7125as	9650as 11750as 11890as
		11850na	11920va 11980va 12005va				9605na

SELECTED PROGRAMS

Sundays

- 0101 BBC: This month's drama: "Upstream!" (4th); "Ice Cream" (11th); "Night And Day" (18th/25th).
 0107 Radio Canada Int'l: The Inside Track. A sports feature magazine.
 0111 Radio Moscow (North America): Moscow Mailbag. A q&a show based on listener letters.
 0111 Radio Moscow (World Service): Newmarket. A look at commercial products and opportunities in the USSR.
 0130 Radio Canada Int'l: Media File. The ethics, responsibilities, and performance of the media.
 0131 Radio Moscow (North America): Vasily's Week end. Spins his favorite records.
 0131 Radio Moscow (World Service): Audio Book Club.

Mondays

- 0101 BBC: Feature/Drama. This month marks the return of "Desert Island Discs," as stars choose their favorite LP's.
 0107 Radio Canada Int'l: The Inside Track. See S 0107.
 0111 Radio Moscow (No Amer): Feature. See S 0020.
 0111 Radio Moscow (World Service): Music And Musicians. See S 1311.
 0130 Radio Canada Int'l: Royal Canadian Air Farce. A humorous look at the land up north.
 0130 Radio Japan: DX Corner. See S 0330.
 0131 R.Moscow (No Am): Moscow Mailbag. See S0111.
 0140 R. Moscow (No Amer): Top Priority. See S 0511.
 0145 BBC: Classical Music. Vajahat Khan examines Indian classical music on "A Mystical Music" (through 26th).

Tuesdays

- 0105 BBC: Outlook. See M 1405.
 0111 Radio Moscow (No Amer): Feature. See S 0020.
 0111 Radio Moscow (World Service): Focus On Asia And The Pacific. News and comments on events in the region.
 0115 Radio Japan: In Conversation. See M 0315.
 0130 BBC: Music. "Folk In Britain" (6th/20th); "Jazz Now And Then" (13th/27th).
 0131 R. Moscow (World Service): Music. See M 1131.
 0140 R. Japan: Let's Practice Japanese. See M 0320.
 0145 BBC: Health Matters. New medical developments and methods of keeping fit.
 0150 Radio Japan: Commentary. See M 0350.

Wednesdays

- 0105 BBC: Outlook. See M 1405.
 0111 Radio Moscow (No Amer): Feature. See S 0020.
 0111 Radio Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
 0120 R.Moscow (No Amer): Top Priority. See S 0511.
 0130 BBC: Talks. What are the world's "Great Newspapers"? Find out on the BBC (through 9/4).
 0131 R. Moscow (World Service): Music. See M 1131.
 0140 Radio Moscow (North America): Home In The USSR. See T 2340.
 0145 BBC: Country Style. David Allan profiles the country music scene on both sides of the pond.
 0150 Radio Moscow (No Amer): Feature. See S 0020.

Thursdays

- 0105 BBC: Outlook. See M 1405.
 0111 Radio Moscow (Nor Amer): Feature. See S 0020.
 0111 Radio Moscow (World Service): Focus On Asia

- And The Pacific. See T 0111.
 0130 BBC: Waveguide. See M 0530.
 0131 R. Moscow (No Am): Moscow Mailbag. See S0111.
 0131 R.Moscow (World Service): Music. See M 1131.
 0140 BBC: Book Choice. A short review of a recently released book.
 0140 Radio Moscow (No Amer): Feature. See S 0020.
 0145 BBC: The Farming World. Agricultural news and technological innovations for farmers.

Fridays

- 0105 BBC: Outlook. See M 1405.
 0111 Radio Moscow (No Amer): Feature. See S 0020.
 0111 Radio Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
 0130 BBC: Seven Seas. Malcolm Billings presents news about ships and the sea.
 0131 R.Moscow (World Service): Music. See M 1131.
 0145 BBC: Global Concerns. An update on environmental issues.

Saturdays

- 0105 BBC: Outlook. See M 1405.
 0111 R.Moscow (No Amer): Top Priority. See S 0511.
 0111 R.Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
 0115 Radio Japan: Music Mix. See F 0315.
 0130 BBC: Short Story (except 3rd, 31st: "Seeing Stars"). Drama written by BBC listeners.
 0131 R.Moscow (NoAmer): Feature. See S 0020.
 0131 R.Moscow (World Service): Music. See M1131.
 0140 R.Moscow (NoAmer): Science & EngrSee S0611.
 0145 BBC: Here's Humph! All that jazz..

MONITORING TIMES

August 1991

65

0200 UTC

[10:00 PM EDT/7:00 PM PDT]

FREQUENCIES

0200-0300	ABC Brisbane	4920do 9660do
0200-0300	ABC Perth	2006070do 9610do
0200-0230	BBC London	5975na 6005sa 6175na
		6195eu 7135as 7325na 9410eu
		9580as 9590na 9670me 9915na
		11750sa 11955as 12095va 15260sa
		15280as 15360pa 15380as 21715as
0200-0300	CBN	6160do
0200-0300	Christian Science World S	9455eu 9850eu 13760eu
		17555eu 17865va
0200-0250	Deutsche Welle	7285as 9615as 9690as
		11945as 11965as 15235as
0200-0230	FEBC Radio Int'l	15450as
0200-0300	HCJB Quito	9745na 15155na 17875sa
0200-0300 AS	KSDA Guam	13720as
0200-0300	KTBN Salt Lake City	7510am
0200-0300	R. for Peace Int'l	7375na 13630na 15030na
		21566na
0200-0300	Radio Australia	11880va 11930va 15160va
		15240va 15320va 17630va 17715va
		17750va 17795va 21525va 21740va
		21775va
0200-0300	Radio Budapest	6110na 9835na 11910na
0200-0300	Radio Cairo	9475na 9675na
0200-0300	Radio Canada Int'l	9535ca 9755ca 11845ca
		11940ca 13720ca
0200-0300	Radio Cultura	3300do
0200-0230	Radio Finland	15185na 15430na
0200-0300	Radio Havana Cuba	15140am
0200-0300	Radio Luxembourg	6090om
0200-0300	Radio Moscow	4895na 11690va 11710na
		11780va 11835va 11850na 11980va
		12005va 12050va 13605va 15140va
		15290va 15315va 15320va 15410va
		15415va 15425va 15480va 15540va
		15550va
0200-0300	Radio New Zealand Int'l	17770pa
0200-0230 sm	Radio Norway	15360na

0200-0300	Radio Romania Int'l	5990am 6155am 9570am
		11830am 11940am 15380am
0200-0230	Radio Sweden	9695na 11705na
0200-0300	Radio Thailand	4830as 9655as 11905as
0200-0300	smtwhrTV Malaysia	7295do
0200-0300	SBC Radio 1	5052do 11940do
0200-0300	SLBS	3316do
0200-0230	Sri Lanka B'casting Corp.	6005as 9720as 15425as
0200-0230	Swiss Radio Int'l	6125am 6135am 9650am
		9885am 12035am 17730am
0200-0230	mtwhf Voice of America	5995ca 9775ca 9815ca
		11580ca 15205ca
0200-0300	Voice of America	7115as 7205as 11705as
		15115as 15160as 15250as
		17740as 21550as
0200-0300	Voice of Free China	5950na 9680na 9765pa
		11740ca 11860as 15345as
0200-0230	mtwhfa Voice of Kenya	6075do
0200-0300	WHRI Noblesville	7315na 9495sa
0200-0300	WINB Red Lion	15145eu
0200-0300	WRNO New Orleans	7355am
0200-0300	WWCR Nashville	7520na
0200-0300	WYFR Okeechobee	6065na 9505am 15440na
0230-0300	BBC London	5975na 6005sa 6175na
		6195eu 7135me 7325na 9410eu
		9670me 9915na 11750sa 11955me
		12095va 15260sa 15280as 15360pa
		21715as
0230-0300	Radio Baghdad	11860na
0230-0245	Radio Pakistan	9545as 15115as 17640as
0230-0300	Radio Portugal	9555sa 9600na 9705na
		11840sa
0230-0300	Radio Tirana	9580na 11825na
0230-0300	Sri Lanka B'casting Corp.	9720as 15425as
0230-0300 s	Voice of Kenya	6075do
0240-0300	Radio 2	6165do 7235do
0245-0300	Radio Korea	15575va
0249-0300	Radio Yerevan	11790na 13645na 15180na
		15455na 15485na
0250-0300	Radio Vaticana	7305na 9615na 11625na

SELECTED PROGRAMS

Sundays

- 0211 Radio Moscow: Outlook. See S 0011.
 0220 Radio Moscow: Feature. See S 0020.
 0230 BBC: Feature. This month's programs are "Muslims In Britain" (4th); "The Image Makers" (11th); "Falling In Love" (18th); "It's The Law!" (25th).

Mondays

- 0211 Radio Moscow: Science And Engineering. See S 0611.
 0225 Radio Moscow: Vasily's Weekend. See S 0131.
 0230 BBC: Composer Of The Month. Profiles of famous composers; this month, Denmark's Carl Nielsen.

Tuesdays

- 0207 Radio Canada Int'l: As It Happens. See M 1337.
 0211 Radio Moscow: Outlook. See S 0011.
 0220 Radio Moscow: Newmarket. See S 0111.
 0230 BBC: Sports International. Topical features and reports on sports the world over.
 0240 Radio Moscow: Update. See T 0040.

Wednesdays

- 0207 Radio Canada Int'l: As It Happens. See M 1337.
 0211 Radio Moscow: Outlook. See S 0011.
 0220 Radio Moscow: Newmarket. See S 0111.
 0230 BBC: Development '91. Aid and development

issues for developing nations.

0240 Radio Moscow: Update. See T 0040.

Thursdays

- 0207 Radio Canada Int'l: As It Happens. See M 1337.
 0210 Radio Moscow: Outlook. See S 0011.
 0220 Radio Moscow: Home In The USSR. See T 2340.
 0230 BBC: Assignment. Starting on the 8th, "Assignment" goes on summer hiatus, replaced by Geoffrey Stern's "Leaders And Leadership," conversations with great world leaders (through September 12th).
 0240 Radio Moscow: Update. See T 0040.

Fridays

- 0207 Radio Canada Int'l: As It Happens. See M 1337.
 0211 Radio Moscow: Outlook. See S 0011.
 0220 Radio Moscow: Science And Engineering. See S 0611.
 0230 BBC: Drama. See H 1130.
 0240 Radio Moscow: Update. See T 0040.

Saturdays

- 0207 Radio Canada Int'l: As It Happens. See M 1337.
 0211 Radio Moscow: Outlook. See S 0011.
 0220 Radio Moscow: Home In The USSR. See T 2340.
 0230 BBC: People And Politics. The background to the British political scene.
 0240 Radio Moscow: Update. See T 0040.



Jill Bevilacqua prepares for a broadcast on Vatican Radio.

0300 UTC

[11:00 PM EDT/8:00 PM PDT]

FREQUENCIES

0300-0400	ABC Brisbane	4920do	9660do	0300-0400	Radio New Zealand Int'l	17770pa
0300-0400	ABC Perth	9610do		0300-0330	Radio Prague	5930na 7345na 11685na
0300-0330	BBC London	3255af	5975na 6005af	0300-0400	Radio Sofia, Bulgaria	11720eu 15160af 17825af
		6180eu	6190af 6195eu 7135me	0300-0400	Radio Tanzania	5985af 9685af 11765af
		9410eu	9600af 9670me 11760me	0300-0400	Radio Thailand	4830as 9655as 11905as
		11955me	12095eu 15280as 15310as	0300-0315	Radio Vaticana	7305na 9615na 11625na
		15360pa	15380as 15420af 15590af	0300-0400	smtwhrTV Malaysia	7295do
		21715as		0300-0400	SBC Radio 1	5052do 11940do
0300-0400	CBN	6160do		0300-0400	SLBS	3316do
0300-0400	CFCX Montreal	6005do		0300-0400	Sri Lanka B'casting Corp.	9720as 15425as
0300-0400	CFRX Toronto	6070do		0300-0400	Trans World Radio Boniare	9535am 11930am
0300-0400	Christian Science World S	9455na 9850na 13760na		0300-0330	Voice of America	6095va 15160va 15195va
		17555na 17865va				17810va 17865va
0300-0350	Deutsche Welle	6085na 6145na 9545na		0300-0400	Voice of America	6035af 9575af 11835af
		11810na 11890na 13610na				15115af 17715af 21600af
		13770na 15205na 15425na		0300-0400	Voice of Free China	5950na 9680na
0300-0400	HCJB Quito	9745na 15155na 21545na		0300-0400	Voice of Kenya	6075do
0300-0400	KTBN Salt Lake City	7510am		0300-0400	Voice of Turkey	9445na 17760as
0300-0400	KVOH Los Angeles	9785na		0300-0400	WHRI Noblesville	7315na 9495sa
0300-0400	R. Peace Int'l	7 375na 13630na 15030na		0300-0400	WRNO New Orleans	7355am
		21566na		0300-0400	WWCR Nashville	7520na
0300-0330	Radio Australia	11880va 11930va 15160va		0300-0400	WYFR Okeechobee	6065na 9505na
		15240va 15320va 17630va		0310-0325	Vatican Radio	9635na
		17715va 17750va 17795va		0325-0400	mtwhfa Zimbabwe BC Corp.	3396do
		21525va 21740va 21775va		0330-0400	BBC London	3255af 5975na 6005af
0300-0400	Radio Baghdad	11860na				6180eu 6190af 6195eu 9410eu
0300-0400	Radio Beijing	9690am 9770am 11715am				9600af 9915na 11740af 11760me
0300-0330	Radio Cairo	9475na 9675na		0330-0400	Radio Australia	11880va 11930va 15160va
0300-0400	Radio Cultura	3300do				15240va 15320va 15530va 17630va
0300-0400	Radio Havana Cuba	15140am				17715va 17795va 21525va 21740va
0300-0330	Radio Japan	15325na 17825na 21610na				21775va
0300-0400	Radio Moscow	4895na 9720va 11675va		0330-0400	Radio Netherlands	6165am 9590am
		11690va 11710na 11710va 11780va		0330-0400	Radio Sweden	9695na 11705na
		11800va 11850na 11850va 11980va		0330-0400	Radio Tirana	9760na 11825na
		12035va 12050va 13605va 15140va		0330-0400	UAE Radio	11945na 13675na 15400na
		15280va 15315va 15320va 15410va				15435na
		15415va		0340-0350	twfhas R National de Venezuela	9540om
				0340-0350	mtwhfa Voice of Greece	9395am 9420am 11645am
				0350-0400	RAI	11905as 15330as 17795as

SELECTED PROGRAMS

Sundays

- 0311 Radio Moscow: Moscow Mailbag. See S 0111.
 0315 BBC: Recording Of The Week. A personal choice from the new classical music releases.
 0315 Radio Japan: Let's Learn Japanese. Japanese language lessons for English speakers.
 0330 BBC: From Our Own Correspondent. Reporters comment on the background to the news.
 0330 Radio Japan: DX Corner. Rika Kobayashi presents shortwave radio news, features, and reception reports.
 0331 Radio Moscow: Vasily's Weekend. See S 0131.
 0350 BBC: Write On... Listener letters, opinions, and questions.
 0355 Radio Japan: Viewpoint. Japan's international role with regard to major issues at home and abroad.

Mondays

- 0311 Radio Moscow: Feature. See S 0020.
 0315 BBC: Good Books. Recommendations of books to read.
 0315 Radio Japan (North America): Viewpoint. See S 0355.
 0315 Radio Japan: In Conversation. Celebrities talk about themselves, in between musical selections.
 0320 Radio Japan (North America): Let's Practice Japanese. A practice session for the week's language lesson.
 0330 BBC: Anything Goes. See S 1430.

- 0331 Radio Moscow: Moscow Mailbag. See S 0111.
 0340 Radio Japan: Let's Practice Japanese. See M 0320.
 0340 Radio Moscow: Top Priority. See S 0511.
 0350 Radio Japan: Commentary. Opinions on current news events worldwide.

Tuesdays

- 0311 Radio Moscow: Feature. See S 0020.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: Japan Focus. Program details not available at press time.
 0330 BBC: John Peel. Newly released albums and singles from the contemporary music scene.
 0330 Radio Japan: Into Japan. Program details not available at press time.
 0350 Radio Japan: Commentary. See M 0350.

Wednesdays

- 0311 Radio Moscow: Feature. See S 0020.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: Asia Hotline. A look at the rapid changes in other Asian nations.
 0320 Radio Moscow: Top Priority. See S 0511.
 0330 BBC: Pop Science. Janice Long mixes pop music and sober science (through 28th).
 0330 Radio Japan: Asian Plaza. Program details not available at press time.
 0340 Radio Moscow: Home In The USSR. See T 2340.
 0350 Radio Japan: Commentary. See M 0350.
 0350 Radio Moscow: Feature. See S 0020.

Thursdays

- 0311 Radio Moscow: Feature. See S 0020.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: Business Today. The latest trends in the Japanese economy.
 0330 BBC: Quiz. See M 1215.
 0330 Radio Japan: Economy Update. Newly marketed products, consumer trends, and interviews.
 0331 Radio Moscow: Moscow Mailbag. See S 0111.
 0340 Radio Moscow: Feature. See S 0020.
 0350 Radio Japan: Commentary. See M 0350.

Fridays

- 0311 Radio Moscow: Feature. See S 0020.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: Music Mix. A program for young listeners, with Japanese pop music and discussion.
 0330 BBC: Focus On Faith. Comment and discussion on major issues in various religions.
 0350 Radio Japan: Commentary. See M 0350.

Saturdays

- 0311 Radio Moscow: Top Priority. See S 0511.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: This Week. See S 0115.
 0330 BBC: The Vintage Chart Show. Paul Burnett with past Top 20 pop music hits.
 0331 Radio Moscow: Feature. See S 0020.
 0340 Radio Moscow: Science And Engineering. See S 0611.

0400 UTC

[12:00 AM EDT/9:00 PM PDT]

FREQUENCIES

0400-0500	ABC Brisbane	4920do 9660do	0400-0500	Radio RSA	11830am 11940am 15380am
0400-0500	ABC Perth	9610do	0400-0500	Radio Sofia, Bulgaria	5960af 11860af 11920af
0400-0430	BBC London	3255af 3955eu 5975na	0400-0430	Radio Tanzania	11720eu 15160af 17825af
		6180eu 6190af 6195eu 7105af	0400-0430	Radio Thailand	5985af 9685af 11765af
		7230eu 9410eu 9600af 9610af	0400-0410	RAI	4830as 9655as 11905as
		9915na 11760me 15070va 15280as	0400-0425	RAI	11905as 15330as 17795as
		15310as 15420af 15590eu 17885af	0400-0500	smtwh RTV Malaysia	5990me 7275me
		21715as	0400-0500	SBC Radio 1	7295do
0400-0500	CBN	6160do	0400-0500	SLBS	5052do 11940do
0400-0500	CFCX Montreal	6005do	0400-0500	Sri Lanka B'casting Corp.	3316do
0400-0500	CFRX	6070do	0400-0430	Swiss Radio Int'l	9720as 15425as
0400-0500	Christian Science World S	9455na 9840af 13760na	0400-0430	Trans World Radio	6135am 9650am 9885am
		17555as 17780as	0400-0430	Trans World Radio	12035am
0400-0450	Deutsche Welle	6145af 7150af 7225af	0400-0430	Voice of America	9535am 11930am
		9565af 9765af 11765af 11890af	0400-0430	Voice of America	9535am 11930am
		13610af	0400-0430	Voice of America	5995eu 6040eu 6140eu
0400-0500	HCJB Quito	13770af 15425af			7170eu 7200eu 11825eu
0400-0500	KTBN Salt Lake City	9745na 15155na	0400-0430	Voice of America	15115eu 15205eu
0400-0500	KVOH Los Angeles	7510am			6035af 9575af 11835af
0400-0500	R. for Peace Int'l	9785am	0400-0500	Voice of America	15350af 17715af 21600af
		7375na 13630na 15030na			5995va 6140va 7170va
		21566na	0400-0500	Voice of Kenya	7200va 9715va
0400-0500	Radio 2	6165do 7235do	0400-0500	WHRI Noblesville	6075do
0400-0500	Radio Australia	11880va 11930va 15160va	0400-0500	smtwhf WMLK Bethel	7315na 9495sa
		15240va 15320va 15530va 17630va	0400-0500	WRNO New Orleans	9465eu
		17715va 17795va 21525va 21740va	0400-0500	WWCR Nashville	6185am
		21775va	0400-0500	WYFR Okeechobee	7520na
0400-0430	Radio Baghdad	11860na	0400-0500	mtwhfa Zimbabwe BC Corp.	6065na 9505na
0400-0500	Radio Beijing	11685am 11840am	0430-0500	BBC London	3396do
0400-0430	Radio Canada Int'l	15275me			3255af 3955eu 5975na 6005af
0400-0500	Radio Canada Int'l	11925as	0430-0500	Radio Nigeria	6180eu 6190af 6195eu 7230eu
0400-0425	Radio Cultura	3300do	0430-0500	Radio Southwest Africa	9410eu 9600af 11760me 12095va
0400-0500	Radio Cultura	3300do	0430-0500	Radio Tirana	15070va 15280as 15310as 15400af
0400-0450	Radio Havana Cuba	9505am 9750am 11760am	0430-0500	Radio Zambia Int'l	15420af 15590eu 21470af 21715as
		11820am			3326do 4990do
0400-0500	Radio Moscow	9635na 12050na 13605na	0430-0500	Radio South Africa	3270af 3290af
		13645na 15180na 15410na 15425na	0430-0500	Radio Tiran	9480af 11835af
		15455na 15580na 15595na 16190na	0430-0500	Radio Zambia Int'l	9505af 11880af 17895af
0400-0425	Radio Netherlands	6165am 9590am	0430-0500	TWR Swaziland	5055af 5965af 9655af
0400-0500	smtwhf Radio New Zealand Int'l	17770pa			11750af
0400-0430	Radio Norway	11865na	0430-0500	Voice of America	3980eu 5995eu 6040eu 6140eu
0400-0430	Radio Prague	5930na 7345na 11685na			7170eu 7200eu 11825eu 15205eu
0400-0500	Radio Pyongyang	15180as 15230as 17765as	0430-0500	Voice of America	6035af 9575af 1 5115af 17715af
0400-0430	Radio Romania Int'l	5990am 9510am 9570am			21600af

SELECTED PROGRAMS

Sundays

0407 Radio Canada Int'l: Double Exposure. A mocking look at the week's top news stories.
 0411 R. Moscow (No Amer): Mailbag.. See S 0111.
 0411 Radio Moscow (World Service): News And Views..
 0430 BBC: Pop Music. "Stuart Colman's Record Hop" (4th/11th/18th); "B'-Side Beat" (thru 10/27).
 0431 Radio Moscow (North America): Vasily's Weekend. See S 0131.
 0431 Radio Moscow (World Service): Your Top Tune..
 0445 BBC: Talks. "Queens Of Crime" female detective novelists (4th/11th/18th), "Letter From..." around the UK (25th).

Mondays

0407 Radio Canada Int'l: The Inside Track. See S 0107.
 0411 R. Moscow (No Amer): Feature. See S 0020.
 0411 R. Moscow (Wld Serv): News & Views. See S 0411.
 0430 BBC: Off The Shelf. This month's serialized readings are thriller "Gallowglass" (5th-9th) and Umberto Eco's "The Name Of The Rose" (thru 9/5).
 0431 R Moscow (NorAmer): Mailbag See S 0111.
 0431 Radio Moscow (World Service): Jazz Show. A jazz music program.
 0440 R Moscow (No Amer): Top Priority. See S 0511.

0445 BBC: Andy Kershaw's World Of Music.

Tuesdays

0407 Radio Canada Int'l: As It Happens. See M 1337.
 0411 R Moscow (No Amer): Feature. See S 0020.
 0411 R Moscow (Wld Serv): News & Views. See S 0411.
 0430 BBC: Off The Shelf. See M 0430.
 0431 Radio Moscow (World Service): Yours For The Asking. Music as requested by listeners.
 0445 BBC: Europe's World. Life in Europe and its links with the rest of the world.

Wednesdays

0407 Radio Canada Int'l: As It Happens. See M 1337.
 0411 R Moscow (No Amer): Feature. See S 0020.
 0411 R Moscow (Wld Serv): New & Views. See S 0411.
 0420 R Moscow (No Amer): Top Priority. See S 0511.
 0430 BBC: Off The Shelf. See M 0430.
 0431 Radio Moscow (World Service): Music At Your Request. See M 1231.
 0440 Radio Moscow (North America): Home In The USSR. See T 2340.
 0445 BBC: Country Style. See W 0145.
 0450 R Moscow (No Amer): Feature. See S 0020.

Thursdays

0407 Radio Canada Int'l: As It Happens. See M 1337.

0411 R Moscow (No Amer): Feature. See S 0020.
 0411 R Moscow (Wld Serv): News & Views. See S 0411.
 0430 BBC: Off The Shelf. See M 0430.
 0431 R Moscow (No Amer): Mailbag.. See S 0111.
 0431 R Moscow (World Serv): Folk Box. See M 1531.
 0440 R Moscow (No Amer): Feature. See S 0020.
 0445 BBC: From Our Own Correspondent. See S 0330.

Fridays

0407 Radio Canada Int'l: As It Happens. See M 1337.
 0411 R Moscow (No Amer): Feature. See S 0020.
 0411 R Moscow (Wld Serv): News & Views. See S 0411.
 0430 BBC: Off The Shelf. See M 0430.
 0431 R Moscow (World Serv): Music. See M 1131.
 0445 BBC: Music. See T 0130.

Saturdays

0407 Radio Canada Int'l: As It Happens. See M 1337.
 0411 R Moscow (No Amer): Top Priority. See S 0511.
 0411 R Moscow (Wld Serv): News & Views. See S 0411.
 0430 BBC: Here's Humph! See A 0145.
 0431 R Moscow (No Amer): Feature. See S 0020.
 0431 R Moscow (Wld Serv): Vasily's Wknd. See S 0131.
 0440 Radio Moscow (North America): Science And Engineering. See S 0611.
 0445 BBC: Worldbrief. See F 2315.

0500 UTC

[1:00 AM EDT/10:00 PM PDT]

FREQUENCIES

0500-0600	ABC Brisbane	4920do 9660do	0500-0600 s	Radio Zambia Int'l	9505af 11880af 17895af
0500-0600	ABC Perth	9610do	0500-0600	RTV Malaysia	7295do
0500-0530	BBC London	3255af 3955eu 6005af 6180as 6190af 6195eu 7230eu 9410eu 9600af 9640na 11760me 12095va 15070as 15310as 15400af 15420af 15590va 17885af 21470af 21715as	0500-0600	SBC Radio 1	5052do 11940do
		6160do	0500-0600	SLBS	3316do
0500-0600	CBN	6005do	0500-0600	Spanish Foreign Radio	9630na
0500-0600	CFCX Montreal	6070do	0500-0530	TWR Swaziland	5965af 9655af 11750af
0500-0600	CFRX	9455eu 9840eu 13760eu	0500-0530	Vatican Radio	6185eu 6248eu 17710af 17730af 21650af
0500-0600	Christian Science World S	17555eu 17780va	0500-0530	Voice of America	3980eu 5995eu 6040eu 6140eu 7170eu 7200eu 11825eu 15205eu
0500-0530	CRTV Buea	3970do	0500-0600	Voice of America	5995va 6060va 6140va 7170va 7200va 9670va 9700va
0500-0550	Deutsche Welle	5960na 6120na 9700na 9760na 11705na 11890na 13610na 13790na 9745na 15155na 7510am 9785am 3381do 7375na 13630na 15030na 21566na 6165do 7235do	0500-0600	Voice of America	6035af 9575af 15115af 17715af
0500-0600	HCJB Quito	11880va 11930va 15160va 15240va	0500-0600	Voice of Kenya	6075do
0500-0600	KTBN Salt Lake City	15320va 15530va 17630va 17715va	0500-0600	Voice of Nigeria	7255af
0500-0600	KVOH Los Angeles	17795va 21525va 21740va 21775va	0500-0600	WHRI Noblesville	7315na 9495sa
0500-0510 w	Malawi B'casting Corp.	11840am	0500-0600	WINB Red Lion	15145eu
0500-0600	R. for Peace Int'l	9585af	0500-0600	WRNO New Orleans	6185am
0500-0600	Radio 2	9750am 11760am 11820am	0500-0600	WVCR Nashville	7520na
0500-0600	Radio Australia	17765na 17810na 17825na 17890na 21610na 4800do 9635na 12050na 13605na 15455na 15595na 16190na	0500-0600	WYFR Okeechobee	5985na 11580am 15566eu
0500-0600	Radio Beijing	11675va 11690va 11710va 11980va	0500-0530 mtwhf	Zimbabwe BC Corp.	3396do
0500-0600 sa	Radio E. Africa	11995va 13775va 15140va 15210va	0510-0515 w	Radio Botswana	5955af 7255af
0500-0600	Radio Havana Cuba	15280va 15315va 15320va 15415va	0515-0600 mtwhf	Radio Canada Int'l	6050eu 6150eu 7295eu 9750eu 11775eu 17840eu
0500-0600	Radio Japan	15450va 15525va 15535va 15540va 15545va 15550va 15590va 17560va	0524-0600 f	Radio 2	3366do
0500-0510	Radio Lesotho	17770pa	0526-0600	Radio 1	4915do
0500-0600	Radio Moscow	3326do 4990do	0530-0545	BBC English by Radio	6050eu 7210eu 9750eu
0500-0600	Radio Moscow	11720eu 15160af 17825af	0530-0600	BBC London	3255af 3955eu 5975na 6005af 6180as 6190af 6195eu 7230eu 9410eu 9600af 9640na 11760me 12095va 15070as 15310as 15400af 15420af 15590va 17885af 21470af 4850do
0500-0600	Radio New Zealand Int'l	3270af 3290af	0530-0600	Cameroon Radio-TV	3260do 7275do
0500-0600	Radio Nigeria	4830as 9655as 11905as	0530-0600	Guizhou PBS	6015na 6155eu 13730eu 15410me 21490me
0500-0515	Radio Sofia, Bulgaria		0530-0600	Radio Austria Int'l	15340af 15380af 17720af 17745af 17790af 21665af
0500-0600 mtwhf	Radio Southwest Africa		0530-0600	Radio Romania Int'l	7205eu 9500eu
0500-0600	Radio Thailand		0530-0600	Radio Tirana	5965af 11750af
			0530-0600	TWR Swaziland	15435as 17830as 17865as 21700as
			0530-0600	UAE Radio	3980eu 5995eu 6040eu 6060eu 6140eu 7170eu 7200eu 11825eu 15205eu
			0530-0600	Voice of America	3396do 7283do 3970do
			0530-0600 mtwhf	Zimbabwe BC Corp	
			0545-0600	Radio Buea	

SELECTED PROGRAMS

Sundays

- 0511 R Moscow (No Amer): Outlook. See S 0011.
 0511 Radio Moscow (World Service): Top Priority. A panel discussion on major events.
 0515 Radio Japan: Hello From Tokyo. Kiyoko Tanaka and David Powers present listener letters and questions.
 0520 R Moscow (No Amer): Feature. See S 0020.
 0530 BBC: World Business Review. The previous week's news and upcoming events.
 0531 R Moscow (WidServ): Vasily's Wknd See S 0131.
 0540 BBC: Words Of Faith. Speakers from various faiths discuss scripture and their beliefs.
 0545 BBC: Letter From America. Alistair Cooke presents his unique reflections on the USA.

Mondays

- 0511 Radio Moscow (North America): Science And Engineering. See S 0611.
 0511 R Moscow (WidServ): Top Priority. See S 0511.
 0525 R Moscow (No Amer): Vasily's Wknd. See S 0131.
 0530 BBC: Waveguide. Tips on how to hear the BBC.
 0530 Radio Canada Int'l: The Inside Track. See S 0107.
 0530 Radio Japan: Crosscurrents. A current affairs program featuring views from Japan and abroad.

- 0531 R Moscow (Wid Serv): Audio Bk Club. See S 0131.
 0540 BBC: Words Of Faith. See S 0540.
 0545 BBC: Recording Of The Week. See S 0315.
 0555 R Moscow (No Amer): Feature. See S 0020.

Tuesdays

- 0511 R Moscow (No Amer): Outlook. See S 0011.
 0511 R Moscow (WidServ): Update. See T 0040.
 0520 R Moscow (NoAmer): Newmarket. See S 0111.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio Canada Int'l: Double Exposure. See S 0407.
 0531 R Moscow (Wid Serv): Music. See M 1131.
 0540 BBC: Words Of Faith. See S 0540.
 0540 R Moscow (No Amer): Update. See T 0040.

Wednesdays

- 0511 R Moscow (No Amer): Outlook. See S 0011.
 0511 R Moscow (WidServ): Update. See T 0040.
 0520 R Moscow (NoAmer): Newmarket. See S 0111.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio Canada Int'l: Open House. See S 1337.
 0531 R Moscow (Wid Serv): Audio Bk Club. See S 0131.
 0540 BBC: Words Of Faith. See S 0540.
 0540 R Moscow (No Amer): Update. See T 0040.

Thursdays

- 0511 R Moscow (NoAmer): Outlook. See S 0011.
 0511 R Moscow (Wid Serv): Update. See T 0040.
 0520 Radio Moscow (North America): Home In The

USSR. See T 2340.

- 0530 Radio Canada Int'l: Media File. See S 0130.
 0531 R Moscow (Wid Serv): Music. See M 1131.
 0540 BBC: Words Of Faith. See S 0540.
 0540 R Moscow (No Amer): Update. See T 0040.
 0545 BBC: The World Today. See M 1645.

Fridays

- 0511 R Moscow (NoAmer): Outlook. See S 0011.
 0511 R Moscow (WidServ): Update. See T 0040.
 0520 Radio Moscow (North America): Science And Engineering. See S 0611.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio Canada Int'l: The Arts Tonight. Interviews, panel discussions and reviews covering the arts.
 0531 R Moscow (Wid Serv): Audio Bk Club. See S 0131.
 0540 BBC: Words Of Faith. See S 0540.
 0540 R Moscow (NoAmer): Update. See T 0040.

Saturdays

- 0511 R Moscow (NoAmer): Outlook. See S 0011.
 0511 R Moscow (Wid Serv): Update. See T 0040.
 0520 Radio Moscow (North America): Home In The USSR. See T 2340.
 0530 BBC: World Business Report. See M 2305.
 0531 R Moscow (Wid Serv): Music. See M 1131.
 0540 BBC: Words Of Faith. See S 0540.
 0540 R Moscow (NoAmer): Update. See T 0040.

August 1991

0600 UTC

[2:00 AM EDT/11:00 PM PDT]

FREQUENCIES

0600-0630	BBC London	3955eu	6180eu	6190af	6195eu
		7230eu	9410eu	9600af	11760me
		11940af	11955as	12095eu	15070va
		15310as	15400af	15420af	15590va
		17790as	17830as	17885af	21470af
0600-0625	Cameroon Radio-TV	4850do			
0600-0700	CFCX Montreal	6005do			
0600-0700	CFRX Toronto	6070do			
0600-0700	Christian Science World S	9455eu	9840eu	11705na	
		17555eu	17780va		
0600-0650	Deutsche Welle	11765af	13610af	13790af	
		15185af	15205af	17875af	
0600-0700 tent	ELBC Monrovia, Liberia	7275do			
0600-0700	HCJB Quito	9745na	15115na		
0600-0700	King of Hope	6280me			
0600-0700	KTBN Salt Lake City	7510na			
0600-0610 s	Malawi B'casting Corp.	3381do			
0600-0630	Nat'l Radio of Laos	7112as			
0600-0700	R. For Peace Int'l	7375na	13630na	15030na	
		21566na			
0600-0700	Radio 1	4915do			
0600-0700 f	Radio 2	3366do			
0600-0700	Radio 2	6165do	7235do		
0600-0700	Radio Australia	11880va	11930va	15160va	15240va
		15320va	15365va	17630va	17750va
		17795va	21525va	21740va	21775va
0600-0645 s	Radio Douala	4795do			
0600-0700 sa	Radio E.Africa	9585af			
0600-0700	Radio Havana Cuba	11835am			
0600-0700	Radio Korea	7275om	11810na	15170na	
0600-0615 s	Radio Latvia, Riga	5935eu			
0600-0700	Radio Moscow	9635na	12050na	13605na	13645na
		15180na	15410na	15425na	15455na
		15595na	16190na	17605na	
0600-0700	Radio Moscow	11730va	11775va	11980va	13775va
		15140va	15210va	15280va	15415va
		15450va	15535va	15545va	15550va
		15590va	17560va	17600va	17620va
		17625va	17635va	17640va	17710va
0600-0700	Radio New Zealand Int'l	17770pa			

0600-0700	Radio Nigeria	3326do	4990do		
0600-0700	Radio Pyongyang	15180as	15230as		
0600-0700 sa	Radio Thailand	4830as	9655as	11905as	
0600-0630 s	Radio Zambia Int'l	9505af	11880af	17895af	
0600-0700 smtwha	RTV Malaysia	7295do			
0600-0700	SBC Radio 1	5052do	11940do		
0600-0700	SLBS	3316do			
0600-0700	TWR Swaziland	5965af	7200af	11750af	
0600-0700	V. of the Mediterranean	9765eu			
0600-0620	Vatican Radio	6185eu	6248eu		
0600-0700	VOA Europe	3980eu	5995eu	6040eu	
		6060eu	6095eu	6140eu	7170eu
		7325eu	11805eu		
0600-0700	Voice of America	6035af	6125af	9530af	
		9575af	15115af	17715af	
0600-0625	Voice of Kenya	6075do			
0600-0700	Voice of Malaysia	6175as	9750as	15295as	
0600-0700	WHRI Noblesville	7315eu	9495sa		
0600-0700 smtwhf	WMLK Bethel	9465eu			
0600-0700	WWCR Nashville	7520na			
0600-0700	WYFR Okeechobee	5985na	7355eu	13760na	
		15566eu			
0600-0700	Zimbabwe BC Corp	3396do	7283do		
0600-0630 s	ZLXA New Zealand	3935do			
0615-0630 s	Radio Bertoua	4750do			
0625-0700	Voice of Kenya	7140do			
0630-0700	BBC London	5975na	6180eu	6190af	6195eu
		7230eu	9410eu	9600af	9640pa
		11760me	11940af	11955as	12095eu
		15070va	15310as	15400af	15420af
		15590va	17830as	17885af	21470af
0630-0700	BRT Brussels	6035eu	11695eu	13675eu	
0630-0700	Radio Finland	6120eu	9560eu	11755eu	
0630-0700	Radio Polonia	6135eu	7270eu	9675eu	15120eu
0630-0700	Radio Tirana	7205eu	9500eu		
0630-0635 mtwhfRTV	Congolaise	7105do	9610do		
0630-0700	Swiss Radio Int'l	15430af	17570af	21770af	
0630-0700	Vatican Radio	11710af	17730af	21650af	
0630-0700 smtwhf	ZLXA New Zealand	3935do			
0635-0700	Trans World Radio. Monte	9480eu			
0640-0700	TWR Monte Carlo	9480na			
0645-0700	Ghana B'casting Corp.	6130af			

SELECTED PROGRAMS

Sundays

- 0611 Radio Moscow (North America): Moscow Mailbag. See S 0111.
- 0611 Radio Moscow (World Service): Science And Engineering. Developments in Soviet science and technology.
- 0630 BBC: Jazz For The Asking. Digby Fairweather plays listener requests.
- 0631 Radio Moscow (North America): Vasily's Weekend. See S 0131.
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.

Mondays

- 0611 Radio Moscow (North America): Feature. See S 0020.
- 0611 Radio Moscow (World Service): Mailbag. See S 0111.
- 0630 BBC: Feature. See S 1401.
- 0631 Radio Moscow (North America): Moscow Mailbag. See S 0111.
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.
- 0640 Radio Moscow (North America): Top Priority. See S 0511.

Tuesdays

- 0611 Radio Moscow (North America): Feature. See S 0020.
- 0611 Radio Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
- 0630 BBC: Rock/Pop Music. Malcolm Laycock looks back at "All-Time Swing" (through September 3rd).
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.

Wednesdays

- 0611 Radio Moscow (North America): Feature. See S 0020.
- 0611 Radio Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
- 0620 Radio Moscow (North America): Top Priority. See S 0511.
- 0630 BBC: Meridian. Events in the world of the arts.
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.
- 0640 Radio Moscow (North America): Home In The USSR. See T 2340.
- 0650 Radio Moscow (North America): Feature. See S 0020.

Thursdays

- 0611 Radio Moscow (North America): Feature. See S 0020.
- 0611 Radio Moscow (World Service): Focus On Asia

And The Pacific. See T 0111.

- 0630 BBC: Omnibus. See W 0030.
- 0631 Radio Moscow (North America): Moscow Mailbag. See S 0111.
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.
- 0640 Radio Moscow (North America): Feature. See S 0020.

Fridays

- 0611 Radio Moscow (North America): Feature. See S 0020.
- 0611 Radio Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
- 0630 BBC: Meridian. See W 0630.
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.

Saturdays

- 0611 Radio Moscow (North America): Top Priority. See S 0511.
- 0611 Radio Moscow (World Service): Focus On Asia And The Pacific. See T 0111.
- 0630 BBC: Meridian. See W 0630.
- 0631 Radio Moscow (North America): Feature. See S 0020.
- 0631 Radio Moscow (World Service): Africa As We See It. See S 0631.
- 0640 Radio Moscow (North America): Science And Engineering. See S 0611.

0700 UTC

[3:00 AM EDT/12:00 AM PDT]

FREQUENCIES

0700-0730	BBC London	1780as	5975na	7150pa	9640va
		11955as	15280as	15360pa	21715as
0700-0800	CFCX Montreal		6005do		
0700-0800	CFRX Toronto		6070do		
0700-0800	Christian Science World S		9455eu	9840eu	13760pa
			17555as	17780va	
0700-0800 tent	ELBC Monrovia, Liberia			7275do	
0700-0800	Ghana B'casting Corp.			6130af	
0700-0800	HCJB Quito		9610va	9745va	11840va
0700-0800 mtwhf	Italian Radio Relay Svc		9815eu		
0700-0800	King of Hope		6280me		
0700-0800	KTBN Salt Lake City		7510na		
0700-0800	KVOH Los Angeles		9785na		
0700-0710 w	Malawi B'casting Corp.		3381do	5995do	
0700-0800	R. for Peace Int'l		7375na	13630na	15030na
0700-0800	R. for Peace Int'l		7375na	13630na	15030na
0700-0800	Radio 1		4915do		
0700-0800 f	Radio 2		3366do		
0700-0800	Radio 2		6165do	7235do	
0700-0800	Radio Australia		11880va	11930va	15240va
			17630va	21525va	21740va
0700-0710	Radio Bafoussam		4000do		
0700-0800 sa	Radio E. Africa		9585af		
0700-0800	Radio Havana Cuba		11835am		
0700-0800	Radio Japan		15325me	17765eu	17810as
			21525as		
0700-0800	Radio Moscow		17560va	17570va	17600va
			17625va	17635va	17710va
			17765va	17835va	17850va
			17890va	21475va	21515va
			21630va	21645va	21655va
0700-0800	Radio Moscow		9635na	12050na	13605na
			15180na	15410na	15425na
			16190na	17605	
0700-0800	Radio Moscow		21690va	21725va	21740va
					21785va

0700-0730	Radio New Zealand Int'l	21790va	21845va
0700-0800	Radio Nigeria	17770pa	
0700-0800	Radio Pyongyang	3326do	4990do
0700-0715	Radio Romania Int'l	15340as	17765as
		11810au	11940au
		17720au	17805au
0700-0800 sa	Radio Thailand	4830as	9655as
0700-0800 smtwha	RTV Malaysia	7295do	
0700-0800	SBC Radio 1	5052do	11940do
0700-0800	SLBS	3316do	
0700-0800	Trans World Radio	9480eu	
0700-0800	TWR Monte Carlo	9480na	
0700-0800	TWR Swaziland	7200af	11750af
0700-0710 mtwhf	Vatican Radio	6185eu	6248eu
0700-0800	Voice of Free China	5950na	
0700-0800	Voice of Kenya	7140do	
0700-0800	Voice of Malaysia	6175as	9750as
0700-0800	WHRI Noblesville	7315eu	9495sa
0700-0800	WWCR Nashville	7520am	
0700-0800	WYFR Okeechobee	7355na	13695na
0700-0800	Zimbabwe BC Corp.	3396do	7283do
0700-0800 smtwhf	ZXLA New Zealand	3935do	
0705-0800 a	Radio Douala	4795do	
0709-0800 mtwhf	Tristan Radio	3290do	
0730-0800	AWR Foli	7230eu	
0730-0800	BBC London	6180eu	6190af
		9600af	9760eu
		11940af	12095va
		15400af	15420af
		17830as	17885af
0730-0745 mtwhf	Icelandic National Radio	3295om	6100om
0730-0800	Radio Austria	6155eu	13730eu
0730-0800	Radio Netherlands	9630au	9715au
0730-0800	Radio New Zealand	9700as	
0730-0800	Radio Prague	17840pa	21705as
0730-0800	Swiss Radio Int'l	3985eu	6165eu
0740-0800	Radio Prague Inter-Progra	6055eu	7345eu
			9505eu

0800 UTC

[4:00 AM EDT/1:00 AM PDT]

FREQUENCIES

0800-0830	BBC London	6180eu	6190af	7325eu	9410eu
		9600af	9760eu	11760me	11860af
		12095eu	15070eu	15310as	15360pa
		15400af	15420af	15590me	17790as
		17830as	17885af	21470af	21660af
0800-0900	CFCX Montreal		6005do		
0800-0900	CFRX Toronto		6070do		
0800-0900	Christian Science World S		9455va	11705va	13760va
			15610va	17555va	
0800-0900	HCJB Quito		6205pa	9610pa	9745pa
			11835pa	11925pa	
0800-0900 mtwhf	Italian Radio Relay Svc		9815eu		
0800-0900	King of Hope		6280me		
0800-0900	KNLS Anchor Point		11715as		
0800-0900	KTWR Guam		15200as		
0800-0810 w	Malawi B'casting Corp.		3381do		
0800-0900	R. for Peace Int'l		7375na	13630na	15030na
0800-0900	Radio 1		4915do		
0800-0900 f	Radio 2		3366do		
0800-0900	Radio 2		6165do	7235do	
0800-0900	Radio Australia		9710va	15160va	15240va
			17630va	17750va	21775va
0800-0810	Radio Bafoussam		4000do		
0800-0900 a	Radio Douala		4795do		
0800-0900 sa	Radio E. Africa		9585af		
0800-0900	Radio Finland		17800pa	21550pa	
0800-0900	Radio Korea		7550eu	13670eu	
0800-0900	Radio Korea		7550eu	13670eu	
0800-0900	Radio Moscow		7315va	11980va	12010va
			15140va	15155va	15205va
			15375va	15450va	15540va
			15550va	15580va	15590va
			17560va	17570va	17600va
0800-0825	Radio Netherlands		9630au	9715au	
0800-0900	Radio New Zealand Int'l		9700pa		

0800-0900	Radio Nigeria	3326do	4990do
0800-0900	Radio Pyongyang	15180as	15230as
0800-0830	Radio Tirana	9500as	11835as
0800-0900 smtwha	RTV Malaysia	7295do	
0800-0900	SBC Radio 1	5052do	11940do
0800-0900	SLBS	3316do	5980do
0800-0815 mtwhf	Tristan Radio	3290do	
0800-0850	TWR Monte Carlo	9480eu	
0800-0825	TWR Swaziland	7200af	11750af
0800-0900	VCA Europe	11740eu	15160eu
		21570eu	21615eu
0800-0830	Voice of America	11735va	15160va
0800-0830	Voice of America	15195va	21570va
0800-0900	Voice of Indonesia	11752as	11785as
0800-0830	Voice of Islam	15195as	17815as
0800-0900	Voice of Kenya	7140do	
0800-0825	Voice of Malaysia	6175as	9750as
0800-0900	Voice of Nigeria	7255af	
0800-0900	WHRI Noblesville	7315eu	9495sa
0800-0900	WWCR Nashville	7520am	
0800-0900	Zimbabwe BC Corp.	3396do	7283do
0800-0900 smtwhf	ZXLA New Zealand	3935do	
0827-0900	KTWR Guam	11805as	
0830-0900	BBC London	6180eu	6190eu
		9660eu	9760eu
		11955as	12095eu
		15360pa	15400af
		17640va	17830as
0830-0900	Radio Netherlands	9630pa	
0830-0900	Swiss Radio Int'l	9560as	13685as
0830-0900	Voice of America	11735va	15160va
		21700va	
0835-0850 mtwhf	TWR Swaziland	7200af	11750af
0840-0900	Radio Prague Inter-Progra	6055eu	7345eu
0840-0850 mtwhf	Voice of Greece	15650au	17525au

0900 UTC

[5:00 AM EDT/2:00 AM PDT]

FREQUENCIES

0900-0930	BBC London	1170as	5975eu	6045eu	6180eu
		6190af	6195as	7325eu	9410eu
		9660eu	9740as	9750eu	9760eu
		11760me	11860af	11940af	12095eu
		15070va	15400af	17640va	21660af
0900-1000 s	BBS	5023do			
0900-1000	CFCX Montreal	6005do			
0900-1000	CFRX Toronto	6070do			
0900-1000	Christian Science World S	9455va	11705va	13760va	
		15610va	17555va		
0900-0950	Deutsche Welle	6160as	11915as	17780as	
		17820as	21465as	21650as	21680as
0900-0950	Deutsche Welle	9565af	15410af	21600af	
0900-1000	FEBC Radio Int'l	9800as	11665as		
0900-1000	HCJB Quito	9745va			
0900-1000 mtwhf	Italian Radio Relay Svc	9815eu			
0900-1000	King of Hope	6280me			
0900-0927	KTWR Guam	15200as			
0900-1000	KTWR Guam	11805as			
0900-0910	Malawi B'casting Corp.	5995do			
0900-0930	R. for Peace Int'l	7375na	13630na	15030na	21566na
0900-0905	Radio 1	4915do			
0900-0905 f	Radio 2	3366do			
0900-1000	Radio 2	6165do	7235do		
0900-1000	Radio Australia	9580va	9710va	9760va	15160va
		15240va	15320va	15365va	25750va
0900-1000	Radio Beijing	11755au	15440au	17710au	
0900-1000 sa	Radio E.Africa	9585af			
0900-1000	Radio Japan	15270pa	17890pa		
0900-1000	Radio Moscow	7315va	11850va	12010va	12030va
		15140va	15155va	15205va	15320va
		15375va	15405va	15415va	15450va
		15500va	15580va	15590va	17550va

0900-0925	Radio Netherlands	17560va	17570va	17600va	17615va
0900-1000	Radio New Zealand	9630pa			
0900-1000	Radio Nigeria	9700pa			
0900-1000	Radio Tanzania	3326do	4990do		
0900-0915	Radio Voice of Lebanon	5985af	9685af	11765af	
0900-1000	RTV Malaysia	6550me			
0900-1000	SBC Radio 1	7295do			
0900-1000	SLBS	5052do	11940do		
0900-0935 s	Trans World Radio	3316do			
0900-1000	VOA Europe	9480eu			
		11740eu	15160eu	15195eu	
		21570eu	21615eu		
0900-1000	Voice of Kenya	7140do			
0900-1000	Voice of Nigeria	7255af			
0900-1000	WWCR Nashville	7520am			
0900-1000	Zimbabwe BC Corp.	3396do	7283do		
0900-0930 mtwhf	ZXLA New Zealand	3935do			
0905-1000	Cameroon Radio-TV	4850do			
0905-1000 sa	Radio 1	4915do			
0905-1000 sa	Radio 2	3366do			
0905-1000 mtwhf	Radio 2 Schools Program)	7295do			
0910-0935 as	TWR Monte Carlo	11655na			
0910-0940 smwha	Ulaanbaatar Radio	11850pa	12015pa		
0915-0939	Al-Quds Radio	5900om	5990om		
0920-1000	BFBS British Forces	15245me	17830me	21745me	
0930-1000	BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070va	15310as
		15400af	15420af	5575me	15590me
		4940as	9635as	17655as	21600as
0930-1000	Radio Afghanistan	11895pa			
0930-1000	Radio Netherland	7265do			
0930-0940	RTV Togo	6055eu	7345eu	9505eu	
0940-1000	Radio Prague Inter-Progra				

1000 UTC

[6:00 AM EDT/3:00 AM PDT]

FREQUENCIES

1000-1100	All India Radio	15050as	15335as	17387as	17865as
		21735as			
1000-1030	BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070va	15190sa
		15310as	15400af	15420af	15575me
1000-1025 mtwhf	BRT	6035eu	13675eu	21810af	
1000-1100	Cameroon Radio-TV	4850do			
1000-1100	CFCX Montreal	6005do			
1000-1100	CFRX Toronto	6070do			
1000-1100	FEBC Mainila	9800as	11665as		
1000-1100	HCJB Quito	9745pa	11925pa		
1000-1100 mtwhf	Italian Radio Relay Svc	9815eu			
1000-1100	KSDA Guam	13720as			
1000-1100 sa	Radio 1	4915do			
1000-1100 sa	Radio 2	3366do			
1000-1100	Radio 2	6165do	7235do		
1000-1100 mtwhf	Radio 2 Schools Program)	7295do			
1000-1030	Radio Afghanistan	4940as	9635as	17655as	21600as
1000-1100	Radio Australia	7140va	9580va	11800va	13605va
		15160va	15170va	15365va	25750va
1000-1100	Radio Beijing	11755au	15440au	17710au	
1000-1100 sa	Radio E.Africa	9585af			
1000-1100	Radio Moscow	11840na	11850va	12010va	12030va
		15140va	15155va	15320va	15375va
		15405va	15415va	15450va	15500va
		15535va	15540va	15550va	15560va
		15580va	15590va	17560va	17600va
1000-1025	Radio Netherland	11895pa			
1000-1100	Radio New Zealand	9700pa			
1000-1100	Radio Nigeria	4990do	7285do		

1000-1100	Radio RSA, Johannesburg	17835af			
1000-1030	Radio Tanzania	5985af	9685af	11765af	
1000-1100 mtwhf	RTV Malaysia	7295do			
1000-1100	SBC Radio 1	5010do	5052do	11940do	
1000-1100	SLBS	3316do			
1000-1100 s	Tristan Radio	3290do			
1000-1100	TWR Costa Rica	9725ca			
1000-1100	Voice of America	5985as	11720as	11740va	15160va
		15195va	15425as	21570va	21615va
1000-1100	Voice of America	9590ca	11915ca	15120ca	
1000-1100	Voice of Kenya	7140do			
1000-1100	Voice of Nigeria	7255af			
1000-1030	Voice of Vietnam	9755as	12020as		
1000-1100	WWCR Nashville	7520na			
1000-1100	WYFR Okeechobee	1000	5985am	7510am	
1000-1100	Zimbabwe BC Corp.	3396do	7283do		
1030-1100	AWR Fol	7230eu			
1030-1100	BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070va	15190sa
		15310as	15400af	15420af	15575me
1030-1040 mtwhf	Malawi B'casting Corp.	5995do			
1030-1100	Radio Austria	15450as	21490as		
1030-1100	Radio Korea	11715na			
1030-1100 sa	Radio Tanzania	5985af	9685af	11765af	
1030-1100	Radio Zambia Int'l	9505af	11880af	17895af	
1030-1100	Sri Lanka B'casting Corp.	11835as	15120as	17850as	
1030-1100	UAE Radio	15435eu	21605eu		
1030-1100	VOIRI, Teheran, Iran	9575va	9705va	11715va	
		11790va	11940va		
1040-1100	Radio Prague Inter-Progra	6055eu	7345eu	9505eu	
1040-1050 mtwhf	Voice of Greece	15650as	17535as		

AEA is the...

Shortwave Solution



The IsoLoop 10-30 HF antenna is designed to work in limited space applications — apartments, condos, etc. Don't be deceived by its compact size (43" diameter) — it really works! Features include: Continuous coverage from 10 to 30 MHz; narrow bandwidth to suppress out-of-band signals; comes fully assembled (no mechanical joints); much more.

For complete information on these or any other AEA products, call the toll-free Infoline at (800) 432-8873.



Advanced Electronic Applications, Inc.

P.O. Box C2160 Lynnwood, WA 98036
Tech. Support/Sales (206) 775-7373
Upgrade Line (206) 774-1722
FAX (206) 775-2340
CompuServe I.D. 76702,1013

Hayes® Hayes Microcomputer Products.
Hercules™ Hercules Computer Technology, Inc.
Commodore 64 and 128® Commodore
Business Machines. Macintosh® Apple
Computer Inc. Epson® Seiko Epson Corp.



The PK-232MBX is a must for the digital Shortwave Listener. By far the most popular multi-mode controller ever, it can receive seven different types of data signals including Morse code, Baudot, ASCII, TDM (Time Division Multiplex), WEFAX, NAVTEX and Packet. It also features: The indispensable SIAM which automatically identifies many types of digital signals; superior software support for PC compatible, Macintosh and Commodore 64 and 128 computers.



AEA-FAX is simply the best way to demodulate multi-level grey scale fax images received by your general coverage receiver. All necessary hardware and software is included in the package which also features: On-screen tuning "scope"; Autolist feature for unattended image capture and save-to-disk; "Daisy-chain" external RS-232 input allows AEA-FAX to share a COM port with a PK-232MBX or other Hayes-compatible device; up to 16 grey levels (VGA); also supports EGA, CGA and Hercules formats; prints to HP LaserJet or Epson compatible printers.

1100 UTC

[7:00 AM EDT/4:00 AM PDT]

FREQUENCIES

1100-1130	BBC London	5965na	6045eu	6180eu	6190af				
		6195eu	9410eu	9515na	9660eu				
		9740as	9750eu	9760eu	11750as				
		11760me	11940af	12095eu	15070va				
		15310as	15400af	15420af	15575me				
1100-1200	CFCX Montreal		6005do						
1100-1200	CFRX Toronto		6070do						
1100-1200	Christian Science World S	9455eu	9495eu	9820pa	9820pa				
		9820pa	9820pa	9820pa	9820pa				
		9820pa	9820pa	9820pa	9820pa				
		9820pa	9820pa	9820pa	9820pa				
		9820pa	13625pa	15610pa	17555pa				
1100-1150	Deutsche Welle	11890af	15410af	17765af	17800af				
			17860af	21600af					
1100-1200	mtwhf Italian Radio Relay Svc		9815eu						
1100-1200	KTBN Salt Lake City		7510na						
1100-1110 sa	Malawi B'casting Corp.		5995do						
1100-1200	Radio 1		4915do						
1100-1200 sa	Radio 2		3366do						
1100-1200	Radio2, Lusaka, Zambia		6165do	7235do					
1100-1110	mtwhf Radio 2 (Schools Program)		7295do						
1100-1200	Radio Australia	6080va	7240va	9580va	9710va				
		11800va	11930va	15170va	15365va				
		21720va							
1100-1200	Radio Beijing		15135eu						
1100-1200	Radio Japan	6120na	11815sa	11840na	12070pa				
1100-1200	Radio Jordan		13655na						
1100-1200	Radio Moscow	11840na	11850va	15140va	15155va				
		15320va	15375va	15405va	15450va				
		15480va	15500va	15535va	15540va				
		15550va	15560va	15590va	17560va				
		17570va	17600va	17615va	17680va				
1100-1130	Radio Mozambique		9525af	11818af	11835af				
1100-1200	Radio New Zealand, Wellington		9700pa						
1100-1200	HCJB Quito, Ecuador		11740na						
1100-1200 sa	Radio E. Africa, Equatorial Guinea		9585af						
1100-1200	Radio Luxembourg		15350om						
1100-1200	Radio Nigeria, Lagos		4990do	7285do					
1100-1120	Radio Pakistan		17565eu	21520eu					
1100-1200	Radio Pyongyang, No Korea		6576na	9977na	11335na				
1100-1200	Radio RSA, Johannesburg		9555af	11860af	11900af				
1100-1200 sa	Radio Tanzania, Dar es Salaam		5985af	9685af	11765af				
1100-1200	Radio Zambia Int'l, Lusaka	9505af	11880af	17895af					
1100-1200	RTV Malaysia, Radio 4		7295do						
1100-1200	SBC Radio 1, Singapore		5010do	5052do	11940do				
1100-1200	SLBS, Freetown, Sierra Leone		3316do						
1100-1130	Sri Lanka B'casting Corp.		11835as	15120as	17850as				
1100-1130	Swiss Radio Int'l		13635as	15570as	17830as				
			21770as						
1100-1200 s	Tristan Radio, Tristan da Cunha		3290do						
1100-1200	TWR Bonaire		11815am	15345am					
1100-1130	Voice of Vietnam		7416as	9732as					
1100-1200	Voice of America, Washington		5985as	6110as	9760as				
			11720as	15155as	15425as				
			9590ca	11915ca	15120ca				
			7445as						
1100-1200	Voice of Asia, Kaohsiung, Taiwan		7140do						
1100-1200	Voice of Kenya, Nairobi		7255af						
1100-1200	Voice of Nigeria, Lagos		11860me	21675me					
1100-1200 war	Voice of Peace, Baghdad, Iraq		9575va	9705va	11715va				
1100-1125	VOIRI, Teheran, Iran		11790va	11940va					
1100-1200	WYFR Okeechobee		5950na	7355na	11900ca				
1100-1200	Zimbabwe B'casting Corp, Harare		3396do	7283do					
1110-1115	mtwhf Radio Botswana, Gaborone		5955af	7255af					
1115-1145	Voice of Radio Nepal, Kathmandu		5005as	7165as					
1120-1140	Hunan PBS, Changsha, China		4990do						
1125-1130 sa	Radio Botswana, Gaborone		5955af	7255af					
1130-1140	Radio Lesotho, Maseru		4800do						
1130-1145	mtwhf Vatican Radio, Vatican City	6248eu	9645eu	11740eu	15210eu				
1130-1145	RTV Malaysia-Sarawak, Red Ntwrk		5950do	7160do					
1130-1200	Radio Sweden, Stockholm		11960as	17740as	21570pa				
1130-1200	Radio Austria Int'l, Vienna	6155eu	13730eu	15430as	21490na				
1130-1200	mtwhf Radio Finland, Helsinki		15400na	21550na					
1130-1200	Radio Netherlands, Hilversum		5955eu	9715eu	17575eu				
			21480eu	21520eu					
1130-1200	Radio Thailand, Bangkok		4830as	9655as	11905as				
1130-1200	Radio Tirana, Albania		9480as	11835as					
1130-1200	Voice of America, Washington		11735me	15160me	15225me				
			21550me	21705me					
1130-1200	BBC London	5965na	6045eu	6180eu	6190af				
		6195eu	9410eu	9515na	9660eu				
		9740as	9750eu	9760eu	11750as				
		11760me	11940af	12095eu	15070va				
		15220na	15310as	15420af	15575me				
1140-1200	Radio Prague Inter-Program		6055eu	7345eu	9505eu				
1145-1200	Radiodiffusion Nationale de la Republique du Burundi, Bujumbura		6140af						

SELECTED PROGRAMS

Sundays

- 1111 Radio Moscow: Culture And The Arts. A look at the varied arts and cultures of the Soviet Union.
 1115 Radio Japan: Hello From Tokyo. See S 0515.
 1130 BBC: The Ken Bruce Show. See S 0030.
 1130 Radio Japan: Radio Japan Guide. See S 0530.
 1131 Radio Moscow: Audio Book Club. See S 0131.
 1155 Radio Japan: Viewpoint. See S 0355.

Mondays

- 1111 Radio Moscow: Science And Engineering. See S 0611.
 1130 BBC: Composer Of The Month. See M 0230.
 1130 Radio Japan: Crosscurrents. See M 0530.
 1131 Radio Moscow: Music. Music selected by Radio Moscow staff.
 1150 Radio Japan: Commentary. See M 0350.

Tuesdays

- 1111 Radio Moscow: Update. See T 0040.
 1130 BBC: Megamix. Music, sports, fashion, health,



Robert Robinson host of the BBC quiz show "Brain of Britain"

- travel, news, and opinion for young people.
 1130 Radio Japan: Into Japan. See T 0330.
 1131 Radio Moscow: Russian By Radio. See S 1531.
 1150 Radio Japan: Commentary. See M 0350.

Wednesdays

- 1111 Radio Moscow: Update. See T 0040.
 1130 BBC: Meridian. See W 0630.
 1130 Radio Japan: Asian Plaza. See W 0330.
 1131 Radio Moscow: Audio Book Club. See S 0131.
 1150 Radio Japan: Commentary. See M 0350.

Thursdays

- 1111 Radio Moscow: Update. See T 0040.
 1130 BBC: Drama. This month: ex-Juliet Katherine Schlesinger stars in "Window Of Vulnerability" (1st); "Condition Purple" is the tale of a slain Scot prostitute (through 29th).
 1130 Radio Japan: Economy Update. See H 0330.
 1131 Radio Moscow: Russian By Radio. See S 1531.
 1150 Radio Japan: Commentary. See M 0350.

Fridays

- 1111 Radio Moscow: Update. See T 0040.
 1130 BBC: Meridian. See W 0630.
 1130 Radio Japan: A Glimpse of Japan. Japanese culture, lifestyles, and traditions.
 1131 Radio Moscow: Audio Book Club. See S 0131.
 1150 Radio Japan: Commentary. See M 0350.

Saturdays

- 1111 Radio Moscow: Update. See T 0040.
 1115 Radio Japan: This Week. See S 0115.
 1130 BBC: Meridian. See W 0630.
 1131 Radio Moscow: Music. See M 1131.

1200 UTC

[8:00 AM EDT/5:00 AM PDT]

FREQUENCIES

1200-1300	ABC Perth	9610na
1200-1230	BBC London	6045eu 6180eu 6190af 6195eu
		9410eu 9515na 9660eu 9740na
		9750eu 9760eu 11750as 11760me
		11940af 12095eu 15070eu 15220na
		15310as 15420af 15575me 17640va
1200-1300	CFCX Montreal	6005do
1200-1300	CFRX Toronto	6070do
1200-1300	Christian Science World S	9475am 9495am 13625am
		13760am 15610pa
1200-1300	HCJB Quito	11740am 15115am 17890am
1200-1300	mtwhf Italian Radio Relay Svc	9815eu
1200-1300	KTBN Salt Lake City	7510am
1200-1210 w	Malawi B'casting Corp.	3381do 5995do
1200-1300	Radio 1	4915do
1200-1225 sa	Radio 2	3366do
1200-1300	Radio Australia	5995va 6080va 7240va 9580va
		9710va 11800va 11930va 21720va
1200-1300	Radio Beijing	8425as 11660as
1200-1300	Radio Beijing	15110am 17715am
1200-1300	mtwhf Radio Canada Int'l	9635am 11855am 17820am
1200-1300	Radio Canada Int'l	9635am 11855am 17820am
1200-1300	mtwhf Radio Douala	4795do
1200-1300 sa	Radio E. Africa	9585af
1200-1300	Radio Jordan	13655me
1200-1300	Radio Korea	9750na
1200-1230	Radio Mogadishu	6095af
1200-1300	Radio Moscow	11840na 11850va 11940va 12025va
		15110va 15140va 15155va 15205va
		15375va 15480va 15500va 15540va
		15550va 15560va 15595va 17570va
		17615va 17655va 17760va 17765va
1200-1225	Radio Netherlands	5955eu 9715eu 17575eu
		21480eu 21520eu
1200-1210	Radio New Zealand	9700pa
1200-1300	Radio Nigeria	4990do 7285do
1200-1230 as	Radio Norway	17820me 21695as
1200-1230	Radio Romania Int'l	15365as 15380as 17720as
1200-1300 sa	Radio Tanzania	5985af 9684af 11765af
1200-1230	Radio Tashkent	9540as 9600as 15420as

1200-1230	Radio Thailand	4830as 9655as 11905as
1200-1230	Radio Yugoslavia	17725eu 17740na 21600as
1200-1230 s	Radio Zambia Int'l	9505af 11880af 17895af
1200-1300	RTV Malaysia	7295do
1200-1300	SBC Radio 1	5010do 5052do 11940do
1200-1300	SLBS	3316do 5980do
1200-1300	TWR Bonaire	11815am 15345am
1200-1230	smwhf Ulaanbaatar Radio	11850as 12015as
1200-1215	V. of Cambodia	9695as 11938as
1200-1230	mtwhf Vatican Radio	17865as 21515as
1200-1230	Voice of America	6110as 9760as 11715as
		15155as 15425as
1200-1300	Voice of Kenya	7140do
1200-1300	Voice of Nigeria	7255af
1200-1300 war	Voice of Peace	11860me 21675me
1200-1300	WWCR Nashville	15690na
1200-1300	WYFR Okeechobee	5950am 6015am 11580am
		17750am
1215-1230	Radio Bayrak	6150va
1215-1300	Radio Cairo	17595as
1215-1300	Radio Korea	9750am
1226-1300	Radio 2	7295do
1230-1300	BBC London	6045eu 6180eu 6190af 6195ca
		9410eu 9515na 9660eu 9740na
		9750eu 9760eu 11760me 11940af
		12095eu 12170as 15070eu 15220na
		15310as 15420af 15575me 17640va
1230-1255 S	BRT	21810na
1230-1300	Radio Bangladesh	15200as 15605as 15647as 17750as
1230-1255	mtwhf Radio Finland	15400am 21550am
1230-1300	Radio France Int'l	9805eu 11670eu 15155eu 15195eu
		21635na 21645na
1230-1300	Radio Sweden	11715as 17740as 21570as
1230-1300	Sri Lanka B'casting Corp.	6075as 9720as
1230-1300	mtwhf Tristan Radio	3290do
1230-1300	Voice of America	6110as 9760as 11715as
		15155as 15425as
1230-1300	Voice of Turkey	9675eu 17785as
1230-1300	Voice of Vietnam	9840as 12020as 15010as
1235-1245	Voice of Greece	15550am 15650am 17525am
1240-1300	Radio Prague Inter-Progra	6055eu 7345eu 9505eu

SELECTED PROGRAMS

Sundays

- 1201 BBC: Play Of The Week. See S 0101.
 1211 Radio Moscow: News And Views. See S 0411.
 1231 Radio Moscow: Vasily's Weekend. See S 0131.

Mondays

- 1211 Radio Moscow: News And Views. See S 0411.
 1213 Radio Canada Int'l: Open House. See S 1337.
 1215 BBC: Quiz. This month, hear the semis and finals of "Brain Of Britain" (5th/12th) and a new literary quiz, "Slightly Foxed" (through September 16th).
 1231 Radio Moscow: Music At Your Request. Music as requested by listeners.
 1245 BBC: Sports Roundup. News from the world of sports.

Tuesdays

- 1211 Radio Moscow: News And Views. See S 0411.
 1213 Radio Canada Int'l: As It Happens. See M 1337.
 1215 BBC: Multitrack 1: Top 20. See M 2330.
 1231 Radio Moscow: Folk Box. See M 1531.
 1245 BBC: Sports Roundup. See M 1245.

Wednesdays

- 1211 Radio Moscow: News And Views. See S 0411.
 1213 Radio Canada Int'l: As It Happens. See M 1337.
 1215 BBC: New Ideas. See M 1615.
 1231 Radio Moscow: Music. See M 1131.



BBC World Service Correspondent
 Elizabeth Blunt

- 1235 BBC: Talks. See M 1635.
 1245 BBC: Sports Roundup. See M 1245.

Thursdays

- 1211 Radio Moscow: News And Views. See S 0411.
 1213 Radio Canada Int'l: As It Happens. See M 1337.
 1215 BBC: Multitrack 2. See W 2330.
 1231 Radio Moscow: Jazz Show. See M 0431.
 1245 BBC: Sports Roundup. See M 1245.

Fridays

- 1211 Radio Moscow: News And Views. See S 0411.
 1213 Radio Canada Int'l: As It Happens. See M 1337.
 1215 BBC: Feature. This month's fare includes "Birth Of A Nation" in Poland, Lebanon, and Panama (2nd/9th/16th) and "The Great Cathedrals Of Britain" (through September 27th).
 1231 Radio Moscow: Yours For The Asking. See T 0431.
 1245 BBC: Sports Roundup. See M 1245.

Saturdays

- 1211 Radio Moscow: News And Views. See S 0411.
 1215 BBC: Multitrack 3. See F 2330.
 1231 Radio Moscow: Music At Your Request. See M 1231.
 1245 BBC: Sports Roundup. See M 1245.

1300 UTC

[9:00 AM EDT/6:00 AM PDT]

FREQUENCIES

1300-1400	ABC Perth	9610			
1300-1330	BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11760me	11820as	11940af	12095eu
		15070va	15310as	15420af	15575me
1300-1325	BRT Belgium	21810na			
1300-1400	CFCX Montreal	6005do			
1300-1400	CFRX Toronto	6070do			
1300-1400	Christian Science World S	9475pa	9495pa	13625pa	
		13760pa	15610pa		
1300-1400	FEBC Manila	11685pa			
1300-1400	FEBC Radio Int'l	11850as			
1300-1400	HCJB Quito	11740	15115	17890	
1300-1400	mtwhf Italian Radio Relay Svc	9815eu			
1300-1400	KTBN Salt Lake City	7510			
1300-1400	R. Station Peace & Progre	7330as	7380as	9675as	
		11775as	15520as	15535as	
		17665as	17840as		
1300-1400	Radio 1	4915do			
1300-1400	Radio 2	7295do			
1300-1400	Radio Australia	5995va	6080va	7240va	9580va
		9710va	9770va	11720va	21720va
1300-1330	Radio Beijing	11600as	11660as		
1300-1400	Radio Beijing	11855as			
1300-1330	Radio Cairo	17595as			
1300-1400 s	Radio Canada Int'l	11955am	17820am		
1300-1330	mtwhf Radio Douala	4795do			
1300-1400 sa	Radio E. Africa	9585af			
1300-1330 as	Radio Finland	15400na	21550na		
1300-1315	Radio Jordan	13655na			
1300-1400	Radio Jordan	13655na			
1300-1315	Radio Korea	9750na			
1300-1400	Radio Moscow	7175va	7315va	7370va	9785va
		9885va	11685va	11840na	11960va
		12025va	12030va	12070va	15110va
		15155va	15205va	15375va	15405va
		15480va	15500va	15540va	15550va
1300-1400	Radio Nigeria	4990do	7285do		
1300-1330 as	Radio Norway	9590eu	11860eu		
1300-1400	Radio Pyongyang	9325eu	9345eu	9640as	13650as
		15230as			

1300-1400	Radio Romania Int'l	11940eu	15365eu	17720eu	21665eu
1300-1330	Radio Sweden	11960as	17740as	21570as	
1300-1400 sa	Radio Tanzania	5985af	9684af	11765af	
1300-1330	Radio Yugoslavia	21715am			
1300-1400	RTV Malaysia	7295do			
1300-1400	SBC Radio 1	5010do	5052do	11940do	
1300-1400	SLBS	3316do	5980do		
1300-1400	Sri Lanka B'casting Corp.	6075as	9720as		
1300-1330	Swiss Radio Int'l	6165eu	9535eu	12030eu	
1300-1330	TWR Boniare	11815am	15345am		
1300-1330	Voice of America	6110as	9760as	11715as	
		15155as	15245as		
1300-1325	Voice of Kenya	7140do			
1300-1400	Voice of Nigeria	7255af			
1300-1400 war	Voice of Peace	11860me	21675me		
1300-1400	WHRI Noblesville	9465	11790		
1300-1400	WWCR Nashville	15690			
1300-1400	WYFR Okeechobee	6015am	11580am	13695eu	
		17750af			
1315-1330	Radio Voice of Lebanon	5me	6549.5		
1325-1400	mtwhf Voice of Kenya	4934do			
1330-1400	All India Radio	9565as	11760as	15335as	
1330-1400	BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11820as	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
1330-1400	Nat'l Radio of Laos	7112as			
1330-1400	Radio Austria Int'l	15430as			
1330-1400	Radio Canada Int'l	6095as	9535as	9700as	
		11795as			
1330-1400	Radio Douala	4795do			
1330-1400	Radio Finland	15400na	21550na		
1330-1400 a	Radio Republik Indonesia	3385do	6070do		
1330-1400	Radio Tashkent	7325as	9540as	9600as	
		11860as	15470as		
1330-1400	Swiss Radio Int'l	7480as	11695as	13635as	
		15570as	17830as	21695as	
1330-1400	UAE Radio	15320eu	15435eu	21605as	
		21675as			
1330-1400	Voice of America	6110as	9760as	15155as	
		15425as			
1330-1400	Voice of Vietnam	9840as	12020as	15010as	

SELECTED PROGRAMS

Sundays

- 1311 Radio Moscow: Music And Musicians. Music from world-famous performers and composers.
- 1313 Radio Canada Int'l (North America): Sunday Morning. A magazine program covering virtually everything under the sun.
- 1337 Radio Canada Int'l: Open House. The effect of religion on politics, social justice, and personal relations.

Mondays

- 1311 Radio Moscow: Top Priority. See S 0511.
- 1331 Radio Moscow: Russian By Radio. See S 1531.
- 1337 Radio Canada Int'l: As It Happens. A detailed look at the people and events making news in Canada and abroad.

Tuesdays

- 1311 Radio Moscow: Focus On Asia And The Pacific. See T 0111.
- 1331 Radio Moscow: Music. See M 1131.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

Wednesdays

- 1311 Radio Moscow: Focus On Asia And The Pacific. See T 0111.
- 1331 Radio Moscow: Music. See M 1131.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

Thursdays

- 1311 Radio Moscow: Focus On Asia And The Pacific. See T 0111.
- 1331 Radio Moscow: Music. See M 1131.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

Fridays

- 1311 Radio Moscow: Focus On Asia And The Pacific. See T 0111.
- 1331 Radio Moscow: Music. See M 1131.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

Saturdays

- 1311 Radio Moscow: Focus On Asia And The Pacific. See T 0111.
- 1331 Radio Moscow: Your Top Tune. See S 0431.
- 1337 Radio Canada Int'l: Media File. See S 0130.



Richard Lane sent in this scenic QSL from Radio Sweden

1400UTC

[10:00 AM EDT/7:00 AM PDT]

FREQUENCIES

1400-1500	All India Radio	9565as	11760as	15335as
1400-1430	BBC London	5975eu	6045eu	6180eu 6190af
		6195as	9410eu	9660eu 9740as
		9750eu	9760eu	11750as 11820as
		11940af	12095eu	15070eu 15310as
		15575me	17640va	17705eu 17790af
1400-1425 mtwhfBRT		21810na		
1400-1500	Cameroon Radio-TV	4850na		
1400-1500	CFCX Montreal	6005do		
1400-1500	CFRX Toronto	6070do		
1400-1500	Christian Science World S	9530pa	13625pa	13760pa
		15610pa	21670pa	
1400-1500	FEBC Manila	11685pa		
1400-1500	FEBC Radio Int'l	11850as		
1400-1500	HCJB Quito	15115na	17890na	25950na
1400-1500	King of Hope	6280me		
1400-1500	KTN Salt Lake City	7510ww		
1400-1410	Malawi B'casting Corp.	3381do		
1400-1500	Radio 1	4915do		
1400-1500	Radio 2	7295do		
1400-1500	Radio Australia	5995va	6080va	7240va 9580va
		9710va	11720va	17630va
1400-1500	Radio Beijing	4200as	11815as	15135as
		15165as		
1400-1500	Radio Beijing	7405am		
1400-1430	Radio Canada Int'l	11935eu	15305eu	15315eu
		15325eu	17795eu	17820eu
		21545eu		
1400-1500 s	Radio Canada Int'l	11955	17820	
1400-1430	Radio Douala	4795do		
1400-1500	Radio France Int'l	11910as	17650as	21770as
1400-1500	Radio Japan	9535am	11815as	11865as
1400-1410	Radio Juba	9540do	9550do	
1400-1500	Radio Korea	9570as		
1400-1500	Radio Moscow	7370va	9785va	11765va 11840na
		11850va	11870va	11905va 12025va
		12030va	12050va	15140va 15180va

1400-1500	Radio Nigeria	15205va	15375va	15560va	17570va
1400-1500 sa	Radio Tanzania	17635va	17655va	17670va	17810va
1400-1430	Radio Tirana	4990do	7285do		
1400-1500	RTV Malaysia	5985af	9684af	11765af	
1400-1500	SBC Radio 1	9500as	11985as		
1400-1500	SLBS	7295do			
1400-1500	Sri Lanka B'casting Corp.	5010do	5052do	11940do	
1400-1430	Swiss Radio Int'l	3316do	5980do		
1400-1500	VLW6 Wannerero	6075as	9720as		
1400-1500	Voice of America	6165eu	9535eu	12030eu	
		6140			
		6110as	7125as	9645as	9760as
		15160as	15205as	15395as	15425
1400-1500 mtwhfVoice of Kenya		4934do			
1400-1500	Voice of Nigeria	7255af			
1400-1500	WHRI Noblesville	9465na	11790ww		
1400-1500	WRNO New Orleans	15420na			
1400-1500	WWCR Nashville	15690am			
1400-1500	WYFR Okeechobee	6015na	11580sa	17750af	
1405-1430	Radio Finland	6120eu	11755eu	11820eu	
		15185eu	21550eu		
1415-1500	BBS	5023do			
1420-1500	Radio Jordan	9560??			
1430-1500	BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9740as	9750eu
		9760eu	11750as	11820as	11940af
		12095eu	15070va	15310as	15575me
		17640va	17705eu	17790af	17880af
1430-1500	Guizhou PBS	3260do	7275do		
1430-1500	Radio Austria Int'l	6155eu	11780as	13730eu	
		21490va			
1430-1500 mtwhfa	Radio Douala	795do			
1430-1500	Radio Netherlands	5955eu	13770eu	15150eu	
		17575eu	17605eu	21480eu	
1430-1500	Voice of Myanmar	5990do			
1435-1450	Nel Mongol PBS	3970do	7105do		
1440-1450 mtwhfa	R National de Venezuela	9540om			
1445-1500 smwha	Ulaanbaatar Radio	9575as	13780as		
1445-1500	Vatican Radio	6248eu	9645eu	11740eu	

SELECTED PROGRAMS

Sundays

- 1401 BBC: Feature. In "Iraq: The Crucible," find out about Iraq's history (4th); "The Poisoned Cup" looks at pollution in Eastern Europe (11th/18th/25th).
- 1407 Radio Canada Int'l (North America): Sunday Morning. See S 1313.
- 1407 Radio Canada Int'l: The Best of Morningside. Program details not available at press time.
- 1411 Radio Moscow: Science And Engineering. See S 0611.
- 1415 Radio Japan: Hello From Tokyo. See S 0515.
- 1430 BBC: Anything Goes. Bob Holness presents a variety of music and other recordings.
- 1430 Radio Japan: Radio Japan Guide. See S 0530.
- 1431 Radio Moscow: Your Top Tune. See S 0431.
- 1455 Radio Japan: Viewpoint. See S 0355.

Mondays

- 1405 BBC: Outlook. Conversation, controversy, and color from the UK and the world.
- 1407 Radio Canada Int'l: The Best of Morningside. See S 1407.
- 1411 Radio Moscow: Mailbag. See S 0111.
- 1415 Radio Japan: People. See M 0515.
- 1430 BBC: Off The Shelf. See M 0430.
- 1430 Radio Japan: Crosscurrents. See M 0530.
- 1431 Radio Moscow: Audio Book Club. See S 0131.
- 1445 BBC: Talks. Is there a God? Answers to this and

other questions on "Your Questions Of Faith" (through 26th).

- 1450 Radio Japan: Commentary. See M 0350.
- 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Tuesdays

- 1405 BBC: Outlook. See M 1405.
- 1407 Radio Canada Int'l: The Best of Morningside. See S 1407.
- 1411 Radio Moscow: Newmarket. See S 0111.
- 1415 Radio Japan: Japan Focus. See T 0315.
- 1430 BBC: Off The Shelf. See M 0430.
- 1430 Radio Japan: Into Japan. See T 0330.
- 1431 Radio Moscow: Music. See M 1131.
- 1445 BBC: Classical Music. See M 0145.
- 1450 Radio Japan: Commentary. See M 0350.
- 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Wednesdays

- 1405 BBC: Outlook. See M 1405.
- 1407 Radio Canada Int'l: The Best of Morningside. See S 1407.
- 1411 Radio Moscow: Science And Engineering. See S 0611.
- 1415 Radio Japan: Asia Hotline. See W 0315.
- 1430 BBC: Off The Shelf. See M 0430.
- 1430 Radio Japan: Asian Plaza. See W 0330.
- 1431 Radio Moscow: Russian By Radio. See S 1531.
- 1445 BBC: Good Books. See M 0315.
- 1450 Radio Japan: Commentary. See M 0350.
- 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Thursdays

- 1405 BBC: Outlook. See M 1405.
- 1407 Radio Canada Int'l: The Best of Morningside. See S 1407.
- 1411 Radio Moscow: Culture And The Arts. See S 1111.
- 1415 Radio Japan: Business Today. See H 0315.
- 1430 BBC: Off The Shelf. See M 0430.
- 1430 Radio Japan: Economy Update. See H 0330.
- 1431 Radio Moscow: Audio Book Club. See S 0131.
- 1445 BBC: Recording Of The Week. See S 0315.
- 1450 Radio Japan: Commentary. See M 0350.
- 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Fridays

- 1405 BBC: Outlook. See M 1405.
- 1407 Radio Canada Int'l: The Best of Morningside. See S 1407.
- 1411 Radio Moscow: Mailbag. See S 0111.
- 1415 Radio Japan: Music Mix. See F 0315.
- 1430 BBC: Off The Shelf. See M 0430.
- 1431 Radio Moscow: Russian By Radio. See S 1531.
- 1445 BBC: Talks. See S 0445.
- 1450 Radio Japan: Commentary. See M 0350.
- 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Saturdays

- 1401 BBC: Sportsworld. Shortwave's "Wide World Of Sports" with Paddy Feeny.
- 1407 Radio Canada Int'l: Media File. See S 0130.
- 1411 Radio Moscow: Newmarket. See S 0111.
- 1415 Radio Japan: This Week. See S 0115.
- 1431 Radio Moscow: Audio Book Club. See S 0131.

1500 UTC

[11:00 AM EDT/8:00 AM PDT]

FREQUENCIES

1500-1530	BBC London	3915as 5975eu 6045eu 6180eu 6190af 6195eu 6195as 9410eu 9740na 9750eu 9760eu 11750as 11775na 11940af 12095eu 15070va 15310as 15400af 15420af 15575me	1500-1525	Radio Netherlands	5955eu 13770eu 15150eu 17575eu 17605eu 21480eu
1500-1600	Cameroon Radio-TV	4850do	1500-1600	Radio Nigeria	4990do 7285do
1500-1600	CFCX Montreal	6005do	1500-1530 as	Radio Norway	15355na 17790na
1500-1600	CFRX Toronto	6070do	1500-1600	Radio Pyongyang	9325va 9640va 9977va 11760va
1500-1600	Christian Science World S	9530pa 13625pa 13760pa 15610pa 21670pa	1500-1530	Radio Romania Int'l	11775as 11940as 15250as 15335as 17720as 17745as
1500-1550	Deutsche Welle	9735af 11965af 13610af 17735af 17765af 21600af	1500-1600	Radio RSA	7230af 15210af
1500-1600	FEBA	9590as 11865as 15330as	1500-1530 sa	Radio Tanzania	5985af 9684af 11765af
1500-1555	FEBA Seychelles	11865af	1500-1600	RTV Malaysia	7295do
1500-1600 whfa	FEBA Seychelles	9590as 15330af	1500-1600	SBC Radio 1	5010do 5052do 11940do
1500-1600	FEBC Radio Int'l	11685as	1500-1600	SLBS	3316do 5980do
1500-1600	HCJB Quito	15115na 17890na 21455na 25950na	1500-1515 smwha	Ulaanbaatar Radio	6075as 9720as
1500-1600	KNLS Anchor Point	9615as	1500-1600	Voice of America	9575as 13780as 7125as 9645as 9700as 15205va 15260as 15395as
1500-1600	KTN Salt Lake City	15590na	1500-1600	Voice of Ethiopia	9560af
1500-1600	KTWR Guam	11650as	1500-1600 mtwhf	Voice of Kenya	4934do
1500-1600	Radio 1	4915do	1500-1600	Voice of Myanmar	5990do
1500-1600	Radio 2	7295do	1500-1600	Voice of Nigeria	7255af
1500-1600	Radio Australia	5995va 6080va 7240va 9580va 9710va 9770va 11720va 12000va 13745va 17630va	1500-1600	WHRI Noblesville	15105na 21840sa
1500-1600	Radio Bangladesh	4880do	1500-1600	WRNO New Orleans	15420na
1500-1600	Radio Beijing	4200as 11815as 15165as	1500-1600	WWCR Nashville	15690am
1500-1600	Radio Beijing	7405am	1500-1600	WYFR Okeechobee	11580na 11830na 17750af
1500-1530	Radio Canada Int'l	11935eu 15305eu 15325eu 17820eu 21545eu	1530-1600	BBC London	6190af 6195eu 6195as 7180as 9410eu 9740na 9750eu 11750as 11775na 11940af 12095eu 15070va 15260as 15310as 15400af 17640va 17705eu 17880af 21470af 21660af
1500-1600 s	Radio Canada Int'l	11955 17820	1530-1600	Radio Sweden	17875na 21500na
1500-1600	Radio Japan	11865am 21700eu	1530-1600	Radio Tanzania	5985af 9684af 11765af
1500-1600	Radio Moscow	6065va 7315va 9865va 11695va 11840na 11890va 11900va 11995va 12005va 12015va 12025va 12030va 12050va 12070va 15140va 15180va 15205va 15375va 15465va 15480va	1530-1600	Radio Tirana	9500af 11835af
			1530-1600	Radio Zambia Int'l	9505af 11880af 17895af
			1530-1600	Sudan Nat'l B'casting Cor	9540do 9550do 11635do
			1530-1600	Swiss Radio Int'l	13685af 15430af 17830af 21630af
			1530-1600 mtwha	Vatican Radio	6185eu
			1530-1540 mtwhf	Voice of Greece	11645eu 15550am 17525am
			1545-1600 mtwhf	Radiodiffusion Nationale	6140af
			1545-1600	Vatican Radio	11715as 15090as 17870as

SELECTED PROGRAMS

Sundays

- 1507 Radio Canada Int'l (North America): Sunday Morning. See S 1313.
 1507 Radio Canada Int'l: The Best of Morningside. See S 1407.
 1511 Radio Moscow: News And Views. See S 0411.
 1515 BBC: From the Proms. Recordings from this year's Promenade Concerts in London (through September 8th).
 1515 Radio Japan: Let's Learn Japanese. See S 0315.
 1530 Radio Japan: DX Corner. See S 0330.
 1531 Radio Moscow: Russian By Radio. Russian language lessons for English speakers.
 1555 Radio Japan: Viewpoint. See S 0355.

Mondays

- 1507 Radio Canada Int'l: As It Happens. See M 1337.
 1511 Radio Moscow: News And Views. See S 0411.
 1515 BBC: Feature/Drama. See M 0101.
 1515 Radio Japan: In Conversation. See M 0315.
 1531 Radio Moscow: Folk Box. A program for lovers of folk music.
 1540 Radio Japan: Let's Practice Japanese. See M 0320.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Tuesdays

- 1507 Radio Canada Int'l: As It Happens. See M 1337.
 1511 Radio Moscow: News And Views. See S 0411.
 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener rock music requests.
 1515 Radio Japan: Japan Focus. See T 0315.
 1530 Radio Japan: Into Japan. See T 0330.
 1531 Radio Moscow: Music. See M 1131.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Wednesdays

- 1507 Radio Canada Int'l: As It Happens. See M 1337.
 1511 Radio Moscow: News And Views. See S 0411.
 1515 BBC: Talks. See M 2315.
 1515 Radio Japan: Asia Hotline. See W 0315.
 1530 BBC: Comedy Show. This month's comedies include the finale of "Much Binding In The Marsh" (7th); "The Man Who Was Comedy" (through 28th).
 1530 Radio Japan: Asian Plaza. See W 0330.
 1531 Radio Moscow: Jazz Show. See M 0431.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Thursdays

- 1507 Radio Canada Int'l: As It Happens. See M 1337.
 1511 Radio Moscow: News And Views. See S 0411.

- 1515 BBC: Music With Matthew. Brian Matthew with classical music selections.
 1515 Radio Japan: Business Today. See H 0315.
 1530 Radio Japan: Economy Update. See H 0330.
 1531 Radio Moscow: Yours For The Asking. See T 0431.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Fridays

- 1507 Radio Canada Int'l: As It Happens. See M 1337.
 1511 Radio Moscow: News And Views. See S 0411.
 1515 BBC: Music Review. See H 2315.
 1515 Radio Japan: Music Mix. See F 0315.
 1531 Radio Moscow: Music At Your Request. See M 1231.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Saturdays

- 1507 Radio Canada Int'l: Media File. See S 0130.
 1511 Radio Moscow: News And Views. See S 0411.
 1515 BBC: Sportsworld. See A 1401.
 1515 Radio Japan: This Week. See S 0115.
 1531 Radio Moscow: Vasily's Weekend. See S 0131.

1600 UTC

[12:00 PM EDT/9:00 AM PDT]

FREQUENCIES

1600-1630	BBC London	1540af 3915as 5975as 6190af 6195eu 9410eu 9630af 9740me 9750eu 11750as 11775na 11940af 12095eu 15070eu 15400af 17640va 17695eu 17705eu 17860af 17880af
1600-1700	BSKSA Saudi Arabia	9705eu 9720eu
1600-1700	CFCX Montreal	6005do
1600-1700	CFRX Toronto	6070do
1600-1700	Christian Science WorldSv	11580as 13625as 15610am 17555am 21640af
1600-1650	Deutsche Welle	6170as 7225as 15105as 15415as 15595as 17810as 21680as
1600-1700	KSDA Guam	11980as
1600-1700	KTBN Salt Lake City	15590am
1600-1635	KTWR Guam	11650as
1600-1610	Malawi B'casting Corp.	3381do
1600-1700	Radio 1	4915do
1600-1700	Radio 2	7295do
1600-1700	Radio Australia	5995va 6060va 6080va 7240va 9580va 11910va 12000va 13605va 13745va 17630va
1600-1700	Radio Beijing	4130af 9570af 15110af 15130af
1600-1630	Radio Canada Int'l	11935eu 15305eu 15325eu 17820eu 21545eu
1600-1700	Radio France Int'l	6175eu 11705af 12015af 15530me 17620af 17795af 17850af
1600-1700	Radio Korea	5975om 9870af
1600-1610	Radio Lesotho	4800do
1600-1700	Radio Moscow	6065va 7305va 7330va 7370va 9480va 9885va 11630va 11730va 11765va 11840na 11890va 11900va 11940va 11995va 12005va 12015va 12035va 12050va 15185va 15375va
1600-1700	Radio Nigeria	4990do
1600-1630 as	Radio Norway	21705me
1600-1630	Radio Pakistan	13665me 15605me 17555me 17895af 21480af 21530me
1600-1630 mtwhf	Radio Portugal	21530me
1600-1700	Radio RSA	7230af 15210af 17790af
1600-1700	Radio Tanzania	5985af 9684af 11765af
1600-1700	Radio Zambia Int'l	9505af 11880af 17895af

1600-1615 sa	Radiodiffusion Nationale	6140af
1600-1605	SBC Radio 1	5052do 11940do
1600-1700	SLBS	3316do 5980do
1600-1700	Sri Lanka B'casting Corp.	6075as 9720as
1600-1700 mtwhf	Tristan Radio	3290do
1600-1700	TWR Swaziland	9600af
1600-1640	UAE Radio	11795af 13675eu 15320eu 15400af 21605eu
1600-1610	Vatican Radio	11715as 15090as 17870as
1600-1630 mtwhf	Vatican Radio	6248eu 7250eu 9645eu 11740eu 15210eu
1600-1630	Voice of America	3980eu 7125as 9645as 9700va 15205va 15260as 15395as
1600-1700	Voice of America	9575af 11920af 15410af 15580af 17800af 21625af
1600-1700 mtwhf	Voice of Kenya	4934do
1600-1700	Voice of Nigeria	7255af
1600-1700	Voice of the Somali Peopl	6320do
1600-1630	Voice of Vietnam	9840eu 12020eu 15010eu
1600-1700	WHRI Noblesville	15105am 17830am
1600-1700	WRNO New Orleans	15420
1600-1700	WWCR Nashville	15690am
1600-1700	WYFR Okeechobee	11580am 11830am 15355am 17750af 21525eu 21615af
1610-1615 mtwhf	Radio Botswana	5955af 7255af
1615-1630 s	Radiodiffusion Nationale	6140af
1615-1700	Swiss Radio Int'l	11955eu
1630-1700 mwf	Alma Ata Radio	5035do 5915do 6135do
1630-1700	BBC London	3915as 5975as 6190af 6196eu 9410eu 9630af 9740me 11750as 11775na 11940af 12095eu 15070eu 15260na 15310as 15400af 15420af 17640va 17695eu 17860af 17880af
1630-1700	HCJB Quito	21455 21480 25950
1630-1700	Radio Austria	6155eu 11780as 13730eu 21490eu
1630-1700	Radio Cairo	15255af
1630-1700	Radio Canada Int'l	7150as 9555as
1630-1700 mtwhf	Radio Netherlands	6020af 15570af
1630-1700 mtwhf	RTV Morocco	15335af 15360af 17595af
1630-1700	RTV Rwandias	3330 6055
1630-1700	Voice of America	3980eu 6040eu 7125as 9645as 9700va 11740va 15205va 15245va 15260as 15395va

SELECTED PROGRAMS

Sundays

1607 Radio Canada Int'l: The Best of Morningside. See S 1407.
1611 Radio Moscow: Top Priority. See S 0511.
1615 BBC: Feature. See S 0230.
1631 Radio Moscow: Africa As We See It. See S 0631.
1637 Radio Canada Int'l: Open House. See S 1337.
1645 BBC: Letter From America. See S 0545.

Mondays

1607 Radio Canada Int'l: The Best of Morningside. See S 1407.
1611 Radio Moscow: Culture And The Arts. See S 1111.
1615 BBC: New Ideas. Innovative developments in technology and new products.
1631 Radio Moscow: Africa As We See It. See S 0631.
1635 BBC: Talks. This month sees Franz Kafka featured in the last "Writers In A Nutshell" (5th); language is the subject of "Lines Of Communication" (through September 2nd).
1637 Radio Canada Int'l: As It Happens. See M 1337.
1645 BBC: The World Today. A look at a topical aspect of the international scene.

Tuesdays

1607 Radio Canada Int'l: The Best of Morningside. See S 1407.
1611 Radio Moscow: Focus On Asia and The Pacific. See T 0111.
1615 BBC: Megamix. See T 1130.
1631 Radio Moscow: Africa As We See It. See S 0631.
1637 Radio Canada Int'l: As It Happens. See M 1337.
1645 BBC: The World Today. See M 1645.

Wednesdays

1607 Radio Canada Int'l: The Best of Morningside. See S 1407.
1611 Radio Moscow: Focus On Asia and The Pacific. See T 0111.
1615 BBC: Rock/Pop Music. See T 0630.
1631 Radio Moscow: Africa As We See It. See S 0631.
1637 Radio Canada Int'l: As It Happens. See M 1337.
1645 BBC: The World Today. See M 1645.

Thursdays

1607 Radio Canada Int'l: The Best of Morningside. See S 1407.
1611 Radio Moscow: Focus On Asia and The Pacific.

See T 0111.

1615 BBC: Network UK. Issues and events affecting people across the UK.

1631 Radio Moscow: Africa As We See It. See S 0631.

1637 Radio Canada Int'l: As It Happens. See M 1337.

1645 BBC: The World Today. See M 1645.

Fridays

1607 Radio Canada Int'l: The Best of Morningside. See S 1407.

1611 Radio Moscow: Focus On Asia and The Pacific. See T 0111.

1615 BBC: Science In Action. The latest news about scientific innovations.

1631 Radio Moscow: Africa As We See It. See S 0631.

1637 Radio Canada Int'l: As It Happens. See M 1337.

1645 BBC: The World Today. See M 1645.

Saturdays

1607 Radio Canada Int'l: Media File. See S 0130.

1611 Radio Moscow: Focus On Asia and The Pacific. See T 0111.

1615 BBC: Sportsworld. See A 1401.

1631 Radio Moscow: Africa As We See It. See S 0631.

1637 Radio Canada Int'l: Media File. See S 0130.

1700 UTC

[1:00 PM EDT/10:00 AM PDT]

FREQUENCIES

1700-1730	BBC London	3255af	7160me	15260na
		21470af	21660af	
1700-1800	CFCX Montreal	6005do		
1700-1800	CFRX Toronto	6070do		
1700-1800	Christian Science World S	11580as	13625as	15610am
		17555am	21640af	
1700-1800	HCJB Quito	21455am	21480am	25950na
1700-1800	Kingdom of Saudi Arabia	9705eu	9720eu	
1700-1800	KSDA Guam	13720as		
1700-1800	KTBN Salt Lake City	15590		
1700-1800	Radio 1	4915do		
1700-1705	Radio 2	7295do		
1700-1800	Radio Africa	7190af		
1700-1800	Radio Australia	5995va	6060va	6080va 7240va
		9580va	11910va	12000va 13605va
		13745va	17630va	
1700-1710	Radio Ba'foussam	4000do		
1700-1800	Radio Beijing	4130af	7405af	8260af
		9570af	11575af	
1700-1800	Radio Cairo	15255af		
1700-1730	Radio Canada Int'l	7235eu	9555eu	15325eu
		17820eu	21545eu	
1700-1800	Radio Japan	7140as	11815as	11865na 15345me
1700-1800	Radio Moscow	7305va	11630va	11840na 11890va
		11940va	11960va	11995va 12005va
		12015va	12030va	12035va 12050va
		15185va	15375va	15500va 15540va
		17600va	17655va	15500va 15540va
1700-1725	Radio Netherlands	6020af	15570af	
1700-1800	Radio Nigeria	3326do	4990do	
1700-1730 as	Radio Norway	9655eu		
1700-1800	Radio Pakistan	11570eu	15550eu	
1700-1800	Radio Pyongyang	9325va	9640va	9977va 11760va
1700-1800	Radio RSA	7230af	15210af	17790af
1700-1730	Radio Sweden	6065eu	9615eu	

1700-1800	Radio Tanzania	5985af	9684af	11765af
1700-1800	Radio Zambia Int'l	9505af	11880af	17895af
1700-1800 mtwhf	RTV Morocco	15335af	17595af	17815af
1700-1728	SLBS	3316do	5980do	
1700-1730	Sri Lanka B'casting Corp.	6075as	9720as	
1700-1730	TWR Swaziland	3200af	9520af	
1700-1800	Voice of America	3980va	6040va	7125as 9645as
		9700va	9760va	11760eu 15205va
		15245eu	15260eu	15395as
1700-1800	Voice of America	9575af	11920af	15410af 15580af
		17800af	21625af	
1700-1800 mtwhf	Voice of Kenya	4934do		
1700-1800	Voice of Nigeria	7255af		
1700-1800 war	Voice of Peace	6055me	11860me	21675me
1700-1800	WHRI Noblesville	15105	17830	
1700-1800	WMLK Bethel	9465eu		
1700-1800	WRNO New Orleans	15420		
1700-1800	WWCR Nashville	15690		
1700-1800	WYFR Okeechobee	13760am	21500eu	
1706-1800	Radio 2	3366do		
1715-1745	BBC London	9560ca	21660ca	
1715-1730	Radio Buea	3970do		
1728-1800	SLBS	3316do		
1730-1800	BBC London	3255af	7160me	21470af 21660af
1730-1800	BRT Brussels	21815af		
1730-1800	Radio Austria Int'l	5945eu	6155eu	12010me 13730af
1730-1745	Radio Bayrak	6150va		
1730-1745 a	Radio Douala	4795do		
1730-1745 a	Radio Latvia, Riga	5935eu		
1730-1800	Radio Romania Int'l	15365af	17720af	17745af
1730-1800	Radio Sofia, Bulgaria	11660eu	11720eu	11765af
		15330eu	17780af	17825af
1730-1800	TWR Swaziland	3200af		
1730-1800	Vatican Radio	17710af	17730af	21650af 25950
1740-1800	Cameroon Radio-TV	4850do		
1745-1800 mtwhf	Radio Douala	4795do		
1745-1800	RTV Madagascar	3232do	3286do	5005do

1800 UTC

[2:00 PM EDT/11:00 AM PDT]

1800-1900	All India Radio	11935af		
1800-1830	BBC London	3255af	3955eu	5975as 6180eu
		6190af	6195eu	7160me 7325af
		9410eu	9600af	9740me 11750as
		12095eu	15070eu	15310as 15400af
		17640eu	17880af	
1800-1900	Cameroon Radio-TV	4850do		
1800-1900	CFCX Montreal	6005do		
1800-1900	CFRX Toronto	6070do		
1800-1900	Christian Science World S	13625as	15610am	17555am 21640af
1800-1900	Kingdom of Saudi Arabia	9705eu	9720eu	
1800-1900	KNLS Anchor Point	9615as		
1800-1900	KTBN Salt Lake City	15590		
1800-1810	Malawi B'casting Corp.	3381do		
1800-1900	Radio 1	4915do		
1800-1900	Radio 2	7295do		
1800-1900	Radio Africa	7190af		
1800-1900	Radio Australia	5995va	6060va	6080va 7240va
		9580va	9860va	11910va
1800-1840 w	Radio Bertoua	4750do		
1800-1830	Radio Cairo	15255af		
1800-1830	Radio Canada Int'l	13670af	15260af	17820af
1800-1845 mtwhf	Radio Douala	4795do		
1800-1900	Radio for Peace Int'l	13660	21566	25945am
1800-1900	Radio Korea	15575eu		
1800-1900	Radio Moscow	6065va	11655va	11765va 11840na
		11850va	11900va	11995va 12050va
		15230va	15330va	15335va 15375va
		15415va	15520va	15535va 15540va
		15595va	17600va	17655va 17670va
1800-1900	Radio Mozambique	3265af	4855af	9618af
1800-1900	Radio New Zealand Int'l	13785pa		

1800-1900	Radio Nigeria	3326do	4990do	
1800-1830 as	Radio Norway	17755na		
1800-1900	Radio Sofia, Bulgaria	11660eu	11720eu	11765af
		15330eu	17780af	17825af
1800-1830	Radio Sweden	6065va	9655va	11900va
1800-1900	Radio Tanzania	5985af	9684af	11765af
1800-1900	Radio Zambia Int'l	9505af	11880af	17895af
1800-1900	Radiobras	15265eu		
1800-1900 mtwhf	RAE Buenos Aires	11710na		
1800-1830	RTV Congolaise	3265af	4765af	
1800-1900	SLBS	3316do		
1800-1845	TWR Swaziland	3200af	9600af	
1800-1900	Voice of America	3980eu	6040va	9700va 9760va
		11760eu	15205eu	15245eu
1800-1900	Voice of America	9575af	11920af	15410af 15580af
		17800af	21625af	
1800-1900	Voice of Ethiopia, Addis	9662af		
1800-1900 mtwhf	Voice of Kenya	4934do		
1800-1900	Voice of Peace	6055me	11860me	21675me
1800-1830	Voice of Vietnam	9840eu	12020eu	15010eu
1800-1900	WHRI Noblesville	13760na	15105sa	
1800-1900	WMLK Bethel	9465eu		
1800-1900	WRNO New Orleans	15420na		
1800-1900	WWCR Nashville	15690na		
1800-1900	WYFR Okeechobee	21500na		
1815-1900	Radio Bangladesh	12030as	15255as	
1815-1830	Radio Voice of Lebanon	5me	6549.5	
1830-1900	BBC London	3255af	3955eu	6005af 6180eu
		6190af	6195eu	7325eu 9410eu
		9600af	11750as	12095eu 15070eu

continued

continued

1830-1900	Radio Afghanistan	15400af 17880af
1830-1900 as	Radio Canada Int'l	7310eu 9635eu
1830-1900	Radio Finland	15260eu 17820eu
		6120eu 9550eu 11755eu
		15185eu
1830-1900	Radio Kuwait speculative)	11675/1 13610
1830-1900	Radio Netherlands	6020af 15570af 17605af
		21685af
1830-1900	Radio Sweden	6065va 15270va
1830-1900	Radio Tirana	7120eu 9480eu

1830-1900	Sri Lanka B'casting Corp.	9720eu 15120eu
1830-1900	Swiss Radio Int'l	9885af 11955af
1830-1900	VOIRI, Teheran, Iran	6035eu 9022eu
1840-1850 mtwhf	R National de Venezuela	9540om
1840-1850	Voice of Greece	11645af 15650af
1845-1900	Ghana B'casting Corp.	6130af
1845-1900	RTV Guinea	4900af 7125af
1845-1900 s	RTV Mali	4783do 5995do 7285do
		11960do
1845-1900	TWR Swaziland	3200af

1900 UTC

[3:00 PM EDT/12:00 PM PDT]

FREQUENCIES

1900-2000	All India Radio	11935af
1900-1930	BBC London	3255af 3955eu 6005af 6180eu
		6190af 6195eu 7160me 7325eu
		9410eu 9600af 9630af 11750pa
		12095eu 15070eu 15400af 17880af
1900-1945	Cameroon Radio-TV	4850na
1900-2000	CFCX Montreal	6005do
1900-2000	CFRX Toronto	6070do
1900-2000	Christian Science World S	13625as 17555am 21640af 21780am
1900-1950	Deutsche Welle	9760af 11785af 11810af 13790af
		15350af 15390af 17810af
1900-2000	Ghana B'casting Corp.	6130af
1900-2000	HCJB Quito	15270eu 17790eu 21455eu
		21480eu 29590eu
1900-2000	Kingdom of Saudi Arabia	9705eu 9720eu
1900-1930	Kol Israel	11587va 11605va 11675va
		15640va 17630va 17685va
1900-2000	KTCN Salt Lake City	15590
1900-2000	Radio 1	4915do
1900-2000	Radio 2	7295do
1900-1930	Radio Afghanistan	7310eu 9635eu
1900-2000	Radio Africa	7190af
1900-2000	Radio Algiers	9640me 15215me
1900-2000	Radio Australia	5995va 6060va 6080va
		7240va 9580va 9860va
		11910va 12000va 13605va 13745va
1900-2000	Radio Beijing	6955af 9440af 11515af
1900-1930	Radio Canada Int'l	5995eu 7235eu 13650eu
		15325eu 17875eu 21675eu
1900-1930 mtwhf	Radio Canada Int'l	13670af 15260af 17820af
1900-2000	Radio for Peace Int'l	13660 2 21566 2 25945am
1900-2000	Radio Havana Cuba	15435eu
1900-2000	Radio Kuwait speculative)	11675/1 13610
1900-2000	Radio Moscow	7305va 11630va 11765va 11840na
		11890va 13605va 15185va 15330va
		15375va 15540va 15560va 15580va
		1555va 17670va 17695va
		6020af 15570af 17605af 21685af
		13785pa
1900-1925	Radio Netherlands	3326do 4990do
1900-2000 smtwhf	Radio New Zealand Int'l	15175eu 17750pa
1900-2000	Radio Nigeria	5985af 9684af 11765af
1900-1930 as	Radio Norway	9505af 11880af 17895af
1900-1915	Radio Tanzania	15335af
1900-2000	Radio Zambia Int'l	3316do
1900-2000 s	RTV Morocco	15375eu 15395eu
1900-2000	SLBS	9720eu 15120eu
1900-2000	Spanish Foreign Radio	3200af 3240af
1900-2000	Sri Lanka B'casting Corp.	3980eu 6040va 9525as 9700va
1900-2000	TWR Swaziland	9760va 11760va 11870as 15180as
1900-2000	Voice of America	15205va 15245as
		9575af 11920af 15410af 15580af
		17800af 21625af
1900-2000 mtwhf	Voice of Kenya	4934do
1900-2000	Voice of Nigeria	7255af
1900-1930	Voice of Vietnam	9840eu 12020eu 15010eu

1900-1930	VOIRI, Teheran, Iran	6035va 9022va
1900-2000	WHRI Noblesville	13760 17830
1900-2000	WMLK Bethel	9465eu
1900-2000	WRNO New Orleans	15420
1900-2000	WWCR Nashville	15690
1900-2000	WYFR Okeechobee	15355af 21615eu
1910-1915	Radio Botswana	3356af
1920-1930	Radio Buea	3970do
1920-1930	Voice of Greece	7430 9395
1930-2000	BBC London	3255af 3955eu 6005af 6180eu
		6190af 6195eu 7160me 7325eu
		9410eu 9600af 9630af 11750pa
		12095eu 15070eu 15400af 17880af
1930-2000 tes	KFBS Saipan	9475af
1930-1940	Radio Austria Int'l	5945eu 6155eu 12010me
		13730af
1930-1940 irr	Radio Burkina	4815af 7230af
1930-2000	Radio Canada Int'l	6170eu 9650eu 9670eu
		13650eu 15325eu 17825eu
		21675eu
1930-2000	Radio Romania Int'l	5990eu 7195eu 9690eu
1930-2000	Radio Sweden	6065va 9655va
1935-1955	RAI	7275eu 9710eu 11800eu
1935-1945	RTV Togo	5047af
1940-2000 smwhf	Ulaanbaatar Radio	11850eu 12015eu
1945-2000	Radio Sofia, Bulgaria	11765eu 17780af 17825af
1945-2000 mwf	Tristan Radio	3290do
1950-2000	Sudan Nat'l B'casting Cor	9540do 9550do 11635do



Radio Korea QSL sent in by Donald Michael Choleva of Ohio.

2000 UTC

[4:00 PM EDT/1:00 PM PDT]

FREQUENCIES

2000-2030	BBC London	3255af	3955eu	5975eu	6005af
		6180eu	6190af	6195eu	7160me
		7180pa	7325eu	9410eu	9600as
		9630af	11750pa	12095eu	15070eu
		15260sa	15340pa	15400af	17880af
2000-2100	CFCX Montreal	6005do			
2000-2100	CFRX Toronto	6070do			
2000-2100	Christian Science World S	9455as	13625pa	13770am	
		15610eu	17555sa		
2000-2100 tes	KFBS Saipan	9475af			
2000-2100	King of Hope	6280me			
2000-2100	Kingdom of Saudi Arabia	9705eu	9720eu		
2000-2100	KNLS Anchor Point	11910as			
2000-2100	KTBN Salt Lake City	15590			
2000-2100	KVOH Los Angeles	17775am			
2000-2010 w	Malawi B'casting Corp.	3381do			
2000-2100	R. for Peace Int'l	7375na	13630na	15030na	
		21566na			
2000-2100	Radio 1	4915do			
2000-2100	Radio 2	7295do			
2000-2100	Radio Africa	7190af			
2000-2100	Radio Australia	5995va	6060va	6080va	7240va
		9860va	11930va	12000va	13605va
		13745va	17795va		
2000-2100	Radio Beijing	4130eu	8260eu	9920eu	
		11500eu			
2000-2100	Radio Beijing	9440af	11715af	15110af	
2000-2100	Radio Havana Cuba	17705eu			
2000-2100	Radio Kuwait speculative)	11675/1	13610		
2000-2100	Radio Moscow	1143eu	6000va	7330va	11520va
		11630va	11765va	11840na	11890va
		11960va	12050va	12060va	13605va
		15185va	15330va	15500va	15540va
		15560va	15580va	15595va	17695va
2000-2100 smtwhf	Radio New Zealand Int'l	13785pa			
2000-2100	Radio Nigeria	3326do	4990do		
2000-2030 as	Radio Norway	15165na			
2000-2030 mtwhf	Radio Portugal	11740eu			
2000-2100	Radio Pyongyang	9345va	9640va	9977va	

2000-2030	Radio Romania Int'l	5990eu	7195eu	9690eu
2000-2030	Radio Sofia, Bulgaria	11765eu	17780af	17825af
2000-2100 s	Radio Zambia Int'l	9505af	11880af	17895af
2000-2100	SLBS	3316do		
2000-2030	Swiss Radio Int'l	3985eu	6165eu	9535eu
2000-2100 mwf	Tristan Radio	3290do		
2000-2100	TWR Swaziland	3200af	3240af	
2000-2010 smwha	Ulaanbaatar Radio	11850eu	12015eu	
2000-2100	Voice of America	9760va	11760va	15205va 15245va
			9570af	15410af 15580af
2000-2100	Voice of America	17800af	21485af	21625af
			7125as	9675as 11752as
2000-2100	Voice of Indonesia	11785as		
2000-2010 mtwhf	Voice of Kenya	4934do		
2000-2030	Voice of Nigeria	7255af		
2000-2100	Voice of Turkey	9795eu		
2000-2100	WHRI Noblesville	13760af	15105sa	
2000-2100	WRNO New Orleans	15420		
2000-2100	WWCR Nashville	15690		
2000-2100	WYFR Okeechobee	15566eu	17612af	21525eu
		21615eu		
2005-2100	Radio Damascus	12085na	15095na	
2010-2100 sa	Voice of Kenya	4934do		
2015-2045 sth	V. of the Black Cockerel	9700af		
2015-2030	Voix de la Revolution	4870af	5025af	
2020-2030 mtwhf	Voice of Greece	9395eu	11645eu	
2025-2045	RAI	7235me	9575me	11800me
2030-2100	BBC London	3255af	3955eu	5975ca 6005af
		6180eu	6190af	6195eu 7180pa
		7325eu	9410eu	11750pa 12095eu
		15070eu	15260sa	15340pa 15400af
2030-2100	Radio Cairo	15375af		
2030-2100	Radio Korea	6480eu	7550af	15575eu
2030-2100	Radio Netherlands	7285af	9860af	9895af
		11660af	13700af	
2030-2100	Radio Sweden	6065na		
2030-2100	Voice of Vietnam	9840eu	12020eu	15010eu
2045-2100	All India Radio	7412eu	9665eu	9910eu
		11620eu	11715eu	15265eu
2050-2100	Vatican Radio	6248eu	7250eu	

2100 UTC

[5:00 PM EDT/2:00 PM PDT]

FREQUENCIES

2100-2130	BBC London	6195as	5975ca	6005af	3255af
		3955eu	6180eu	15340pa	11750pa
		12095eu	15070na	15260sa	15400af
		9590na	9410eu	7325eu	
2100-2200	CFCX Montreal	6005do			
2100-2200	CFRX Toronto	6070do			
2100-2200	Christian Science World S	9455as	13625pa	13770am	17555sa
		15610eu			
2100-2150	Deutsche Welle	9760as	9765as	11785as	13780as
		15350as	15360as		
2100-2130	King of Hope	6280me			
2100-2200	KTBN Salt Lake City	15590			
2100-2200	KVOH Los Angeles	17775			
2100-2110	Malawi B'casting Corp.	3381do			
2100-2200	R. for Peace Int'l	7375na	13630na	15030na	
		21566na			
2100-2200	R. Nacional de Angola	3355af	9535af		
2100-2200	Radio 1	4915do			
2100-2200	Radio 2	7295do			
2100-2200	Radio Africa	7190af			
2100-2200	Radio Australia	6060va	11880va	11930va	13705va
		15160va	15240va	15320va	17715va
		17795va	21740va		
2100-2200	Radio Baghdad	13660eu			

2100-2200	Radio Beijing	4130eu	9920eu	11500eu
2100-2200	Radio Budapest	6110eu	9835eu	11910eu
2100-2200	Radio Cairo	15375af		
2100-2130	Radio Canada Int'l	5995eu	7235eu	13650eu
2100-2200	Radio Canada Int'l	15325eu	17875eu	
2100-2105	Radio Damascus	12085na	15095na	
2100-2200	Radio Japan	11815me	15230eu	15270eu
		17810as	17890as	
2100-2200	Radio Kiev	5960eu		
2100-2130	Radio Korea	6480eu	7550af	15575eu
2100-2200	Radio Moscow	1143eu	1494eu	7300va 7330va
		9740va	9800va	11520va 11630va
		11675va	11685va	11745va 11840na
		11850va	11890va	12050va 12060va
		15130va	15355va	15385va 15455va
2100-2125	Radio Netherlands	7285af	9860af	9895af
		11660af	13700af	
2100-2200	Radio New Zealand Int'l	13785pa		
2100-2200	Radio Nigeria	3326do	4990do	
2100-2130 mtwhf	Radio Portugal	15250af		
2100-2130	Radio Romania Int'l	5990eu	6105eu	7105eu
		7195eu	9690eu	
		5960eu	11735na	
2100-2145	Radio Yugoslavia	9505af	11880af	17895af
2100-2200	Radio Zambia Int'l	15120as		
2100-2200	SLBC Sri Lanka	3316do		
2100-2200	SLBS			

continued

continued

2100-2130	Swiss Radio Int'l	3985eu	6165eu	9535eu
		9885eu		
2100-2130	Swiss Radio Int'l	12035af	13635af	15525af
2100-2200 mwf	Tristan Radio	3290do		
2100-2115	TWR Swaziland	3240af		
2100-2110	Vatican Radio	6248eu	7250eu	
2100-2130	Vatican Radio	17710af	17730af	21650af
2100-2200	Voice of America	3980eu	6040va	9700va 9760va
		11760va	11870as	11960va 15185as
		15205va	15245as	17735as
2100-2200	Voice of America	15410af	15580af	17800af 21485af
		21625af		
2100-2200	Voice of Peace	6055me	11860me	21675me
2100-2200	WHRI Noblesville	13760	17830	
2100-2200	WRNO New Orleans	15420		
2100-2200	WWCR Nashville	15690		
2100-2200	WYFR Okeechobee	15566af	17612af	21525eu 21615eu
2110-2200	Radio Damascus	12085na	15095na	
2115-2130 mtwhf	BBC London	17715ca		
2115-2130 s	R. Republik Indonesia Jay	6070do		
2115-2200	Radio Cairo	9900eu		
2130-2200	BBC London	3255af	3955eu	5975ca 6005af

		6180eu	6195as	7325eu	9410eu
		9590na	11750pa	12095eu	15070na
		15260sa	15340pa	15400af	
		13660sa			
2130-2200	BBC London	17790eu	21455eu	21480eu	25950eu
2130-2200	HCJB Quito	6280me			
2130-2200 smtwhf	King of Hope	11587va	11605va	15100va	15640va
2130-2200	Kol Israel	17575va	17685va		
		3955as	4400as	5035as	5260as
		5960as	5970as	9505as	15215as
2130-2200	Radio Alma Ata	15315as	15385as	17605as	17715as
		17730as			
2130-2145	Radio Buea	3970do			
2130-2200	Radio Canada Int'l	11880af	15150af	17820af	
2130-2200	Radio Finland	6120eu	11755eu		
2130-2200	Radio Tirana	7245eu	9480eu		
2130-2200	Radio Vilnius	6100eu	9625eu	9710eu	
2130-2200	UAE Radio	11795na	13675na	15320na	
		15400na			
2140-2150mtwhf	R National de Venezuela	9540			
2145-2200	Cameroon Radio-TV	4850na			
2145-2200	Radio Sofia, Bulgaria	11660eu	11710na	15110eu	
		15330na	15370eu	17825na	

2200 UTC

[6:00 PM EDT/3:00 PM PDT]

2200-2230	All India Radio	7412eu	9665eu	9910eu	11620eu
		11715eu	15265eu		
2200-2300	BBC London	5975na	6195as	9410eu	9570pa
		9590na	9915ca	11750sa	11945as
		11955as	12095na	15070na	15260sa
		15340as	15400af	17830as	
2200-2225	BRT	5910eu	9925eu	15515af	
2200-2215	Cameroon Radio-TV	4850na			
2200-2300	CFCX Montreal	6005do			
2200-2300	CFRX Toronto	6070do			
2200-2300	Christian Science World S	9465na	13625as	15405as	
		17555sa	15300af		
2200-2300	DZAS	6030do			
2200-2230 s	KGEI San Francisco	15280sa			
2200-2300	KTBN Salt Lake City	15590			
2200-2300	Radio 1	4915do			
2200-2300	Radio 2	7295do			
2200-2300 sa	Radio Africa	7190af			
2200-2300	Radio Australia	11880va	11930va	13705va	
		15160va	15240va	15320va	
		17715va	17795va	21740va	
2200-2210	Radio Bafoussam	4000do			
2200-2300	Radio Baghdad	13660eu			
2200-2230	Radio Beijing	3985eu			
2200-2245	Radio Cairo	9900eu			
2200-2230	Radio Canada Int'l	5960na	9755na	11905as	
		13670ca			
2200-2210	Radio Damascus	12085na	15095na		
2200-2300	Radio for Peace Int'l	13660 2	21566 2	25945am	
2200-2300	Radio Havana Cuba	7215eu			
2200-2300	Radio Moscow	1494eu	9800va	11520va	
		11675va	11710na	11985va	
		12050va	12060va	15355va	
		15425va	15560va	15580va	

2200-2300	Radio New Zealand Int'l	15595va	17655va	21690va	
2200-2300	Radio Nigeria	17770pa			
2200-2230 as	Radio Norway	3326do	4990do		
2200-2230	Radio Prague	21705va			
2200-2230 a	Radio Republik Indonesia	5930eu	6055eu	7345eu	
2200-2300	Radio Sofia, Bulgaria	3385do	4805do		
		11660eu	11710na	15110eu	
		15330na	15370eu	17825na	
2200-2230	Radio Sweden	6065va			
2200-2215	Radio Zambia Int'l	9505af	11880af	17895af	
2200-2225	RAI	5990as	9710as	11800as	
2200-2218	RTV Congolaise	4765do	5985do		
2200-2300 smtwha	RTV Malaysia	7295do			
2200-2300	SBC Radio 1	5010do	5052do	11940do	
2200-2300	SLBS	3316do			
2200-2300	UAE Radio Abu Dhabi	13605na	15305na	17855na	
2200-2300	Voice of America	6095as	7120va	9770as	11760as
		15185va	15215va	15255as	15290as
		15305va	17735as	17810as	17820as
		17885va			
2200-2300	Voice of Free China	17750eu	21720eu		
2200-2300	Voice of the UAE	13605na	15305na	17855na	
2200-2300	Voice of Turkey	7225eu	9445na	9685eu	
		17880as			
2200-2300	WHRI Noblesville	13760na	17830sa		
2200-2300	WRNO New Orleans	13720na			
2200-2300	WWCR Nashville	15690na			
2200-2300	WYFR Okeechobee	17612af	21525eu		
2205-2300	Vatican Radio	7125as	9615as	11830as	
2230-2300	Radio Tirana	7215eu	9480eu		
2230-2300 mtwhf	RTV Congolaise	4765do			
2230-2300	Swiss Radio Int'l	6190eu			
2240-2225	Voice of Greece	11645am			

2300 UTC

[7:00 PM EDT/4:00 PM PDT]

FREQUENCIES

2300-0000	AWR Costa Rica	9725ca 11825ca
2300-2330	BBC London	5975na 6175na 6195as 7145as 9410eu 9570pa 9590na 9915sa 11750sa 11945as 11955as 12095na 15070na 15260sa 15340pa 15400af
2300-0000	CFCX Montreal	6005na
2300-0000	CFRX Toronto	6070do
2300-0000	Christian Science World S	9465na 13625as 15405as 15300af 17555sa
2300-0000	Christian Science World S	9465na 13625as 15405as 15300af 17555sa
2300-2315	DZAS	6030do
2300-0000	KSDA Guam	15610as
2300-0000	KSDA Guam	15610as
2300-0000	KTNB Salt Lake City	15590na
2300-0000	KTNB Salt Lake City	15590na
2300-0000	R. for Peace Int'l	7375na 13630na 15030na 21566na
2300-2305	Radio 1	4915do
2300-2305	Radio 2	7295do
2300-0000	Radio Australia	11880va 11930va 13605va 15160va 15240va 15320va 17715va 17795va 21740va
2300-2330	Radio Canada Int'l	9755na 11730ca 13670na 11940ca 15235sa
2300-0000	Radio Japan	11735eu 11815am 15195as 15230am 17810pa 21610as
2300-0000	Radio Moscow	11690na 11710na 11780na 11985na 12050na 13605na 15140na 15355na 15425na 15480na 15550na 15560na 15580na 15590na 15595na 16190na 17655na 17735na 17850na 17890na
2300-0000	Radio New Zealand Int'l	17770pa
2300-0000	Radio Orion, South Af	4810af

2300-0000	Radio Pyongyang	11700na 13650na
2300-0000	Radio Sofia, Bulgaria	11660eu 11710na 15110eu 15330na 15370eu 17825na
2300-0000	Radio Thailand	4830as 9655as 11905as
2300-2330	Radio Vilnius	11790na 13645na 15180na 15455na 15485na
2300-0000	smtwha RTV Malaysia	7295do
2300-0000	smtwha RTV Malaysia	7295do
2300-0000	SBC Radio 1	5010do 5052do 11940do
2300-0000	SLBS	3316do
2300-0000	UAE Radio, Abu Dhabi	13605na 15305na 17855na
2300-2330	Vatican Radio	6185eu
2300-0000	Voice of America	7120as 9530va 9770as 11760as 11905va 11960va 15185as 15225va 15290as 15305as 15445va 17735as 17820as 17885va
2300-0000	Voice of the UAE	13605na 15305na 17855na
2300-0000	WHRI Noblesville	9495na 13760sa
2300-0000	WHRI Noblesville	9495na 13760sa
2300-0000	WRNO New Orleans	13720na
2300-0000	WRNO New Orleans	15420na
2300-0000	WWCR Nashville	15690na
2300-0000	WYFR Okeechobee	5985na 11915na
2305-2355	Radio Polonia	7270eu
2315-0000	All India Radio	9535as 9910as 11715as 11745as 15110as
2330-0000	BBC London	5975na 6175na 6195as 7145as 9570pa 9590na 9915sa 11750sa 11945as 11955as 12095na 15070na 15260sa 17830as
2330-0000	BRT Brussels	13655na 13710na
2330-0000	Radio Canada Int'l	5960na 9755na 13670na
2330-0000	Radio Sweden	9695la 11705la
2330-0000	Radio Tirana	6120na 9760na 11825na
2330-0000	Voice of Vietnam	9840as 12020as 15010as

SELECTED PROGRAMS

Sundays

2305 BBC: World Business Review. See S 0530.
 2307 Radio Canada Int'l: Double Exposure. See S 0407.
 2311 Radio Moscow: Feature. See S 0020.
 2315 BBC: Letter From America. See S 0545.
 2315 Radio Japan: Hello From Tokyo. See S 0515.
 2330 BBC: Feature. See S 1401.
 2330 Radio Canada Int'l (Latin America): Quirks and Quarks. See S 0007.
 2330 Radio Canada Int'l (USA): Open House. See S 1337.
 2330 Radio Japan: Radio Japan Guide. See S 0530.
 2331 Radio Moscow: Moscow Mailbag. See S 0111.
 2340 Radio Moscow: Top Priority. See S 0511.
 2355 Radio Japan: Viewpoint. See S 0355.

Mondays

2305 BBC: World Business Report. The latest news from the markets worldwide.
 2311 Radio Moscow: Feature. See S 0020.
 2315 BBC: Talks. Paddy Feeny talks to artists like writer A Byatt and painter David Inshaw on "Artists At Work" (through 26th).
 2315 Radio Japan: People. See M 0515.
 2330 BBC: Multitrack 1: Top 20. The smash singles on the UK pop music charts.
 2330 Radio Canada Int'l: As It Happens. See M 1337.
 2330 Radio Japan: Crosscurrents. See M 0530.
 2350 Radio Japan: Commentary. See M 0350.

Tuesdays

2305 BBC: World Business Report. See M 2305.
 2311 Radio Moscow: Feature. See S 0020.
 2315 BBC: From The Proms. See S 1515.
 2315 Radio Japan: Japan Focus. See T 0315.
 2320 Radio Moscow: Top Priority. See S 0511.
 2330 Radio Canada Int'l: As It Happens. See M 1337.
 2330 Radio Japan: Into Japan. See T 0330.
 2340 Radio Moscow: Home In The USSR. Local events and domestic issues in the ever-changing USSR.
 2350 Radio Japan: Commentary. See M 0350.
 2350 Radio Moscow: Feature. See S 0020.

Wednesdays

2305 BBC: World Business Report. See M 2305.
 2311 Radio Moscow: Feature. See S 0020.
 2315 BBC: Good Books. See M 0315.
 2315 Radio Japan: Asia Hotline. See W 0315.
 2330 BBC: Multitrack 2. New pop records, interviews, news, and contests.
 2330 Radio Canada Int'l: As It Happens. See M 1337.
 2330 Radio Japan: Asian Plaza. See W 0330.
 2331 Radio Moscow: Moscow Mailbag. See S 0111.
 2340 Radio Moscow: Feature. See S 0020.
 2350 Radio Japan: Commentary. See M 0350.

Thursdays

2305 BBC: World Business Report. See M 2305.
 2311 Radio Moscow: Feature. See S 0020.
 2315 BBC: Music Review. News and views from the

world of classical music.

2315 Radio Japan: Business Today. See H 0315.
 2330 Radio Canada Int'l: As It Happens. See M 1337.
 2330 Radio Japan: Economy Update. See H 0330.
 2350 Radio Japan: Commentary. See M 0350.

Fridays

2305 BBC: World Business Report. See M 2305.
 2311 Radio Moscow: Top Priority. See S 0511.
 2315 BBC: Worldbrief. A roundup of the week's news headlines and developments.
 2315 Radio Japan: Music Mix. See F 0315.
 2330 BBC: Multitrack 3. News and releases from the British alternative music scene.
 2330 Radio Canada Int'l: As It Happens. See M 1337.
 2331 Radio Moscow: Feature. See S 0020.
 2340 Radio Moscow: Science And Engineering. See S 0611.
 2350 Radio Japan: Commentary. See M 0350.

Saturdays

2305 BBC: Words Of Faith. See S 0540.
 2307 Radio Canada Int'l: The Inside Track. See S 0107.
 2310 BBC: Book Choice. See H 0140.
 2311 Radio Moscow: Moscow Mailbag. See S 0111.
 2315 BBC: A Jolly Good Show. See T 1515.
 2315 Radio Japan: This Week. See S 0115.
 2330 Radio Canada Int'l: Media File. See S 0130.
 2331 Radio Moscow: Vasily's Weekend. See S 0131.

Enter A World Of Excitement with a Subscription to Popular Electronics®

Get the latest electronic technology and information monthly!

Now you can subscribe to the magazine that plugs you into the exciting world of electronics. With every issue of Popular Electronics you'll find a wide variety of electronics projects you can build and enjoy.

Popular Electronics brings you informative new product and literature listings, feature articles on test equipment and tools—all designed to keep you tuned in to the latest developments in electronics. So if you love to build fascinating electronics, just fill out the subscription form below to subscribe to Popular Electronics... It's a power-house of fun for the electronics enthusiast.

EXCITING MONTHLY FEATURES LIKE:

- ☐ **CONSTRUCTION**—Building projects from crystal sets to electronic roulette
- ☐ **FEATURES**—Educational training on digital electronics, Ohm's Law, Antennas, Communications, Antique Radio, Simplified Theory
- ☐ **HANDS-ON-REPORTS**—User test comments on new and unusual consumer products
- ☐ **SPECIAL COLUMNS**—Think Tank, Circuit Circus, Computer Bits, DX Listening, Antique Radio, Amateur, Scanner Scene

PLUS: ALL OUR GREAT DEPARTMENTS!

You'll get 12 exciting and informative issues of Popular Electronics for only \$18.95. That's a savings of \$16.45 off the regular single copy price. Subscribe to Popular Electronics today! Just fill out the subscription order form below.

Protect Your Air Conditioner From Power Line Problems K-48784

Popular Electronics

AUGUST 1991

DESIGN YOUR OWN ROBOT

Using nature as a model, researchers can create complex, behavior-based, mobile robots. Using the same principles, you can build your own simple yet fascinating demonstration robot

BUILD THE MAGIC-FILM SPEAKER
Learn about the properties of piezoelectric film, and how it can be used to create a most unusual speaker

ELECTRONIC LIMBS
New advances in electronics make modern artificial limbs work nearly as well as the real things

WIRE ANTENNAS FOR HAMS AND SWL's
Though these simple designs have been around since the dawn of radio, their low cost and easy construction make them practical today

Product Reviews
• Sony 8mm Camcorder
• Pioneer Laser Karaoke
• Heath Security System
• And Much More

Save 46% Off The Regular NEWSSTAND Rate

\$2.95 U.S.
\$3.75 CANADA

3 NEW Fun/Cards IN THIS ISSUE

Popular Electronics® SUBSCRIPTION ORDER FORM

P.O. Box 338, Mt. Morris IL. 61054

YES! I want to subscribe to Popular Electronics for 1 Full year (12 Issues) for only \$18.95. That's a savings of \$16.45 off the newstand price.

☐ Payment Enclosed ☐ Bill me later

Please charge my: ☐ Visa ☐ Mastercard

Acct. #

Signature

Exp. Date

PLEASE PRINT BELOW:

NAME

ADDRESS

CITY

STATE

ZIP

Allow 6 to 8 weeks for delivery of first issue. U.S. Funds only.

In Canada add \$6.68 Postage (Includes G.S.T.) All Other Foreign add \$7.50 Postage.

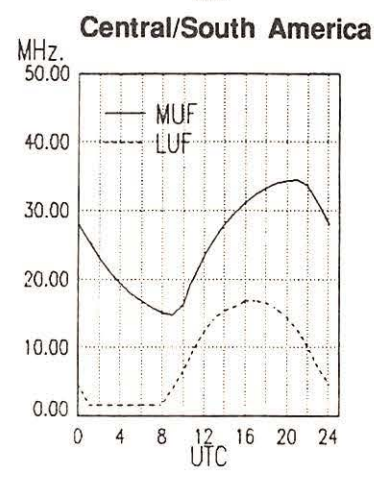
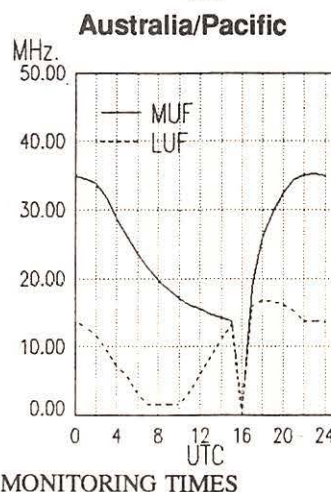
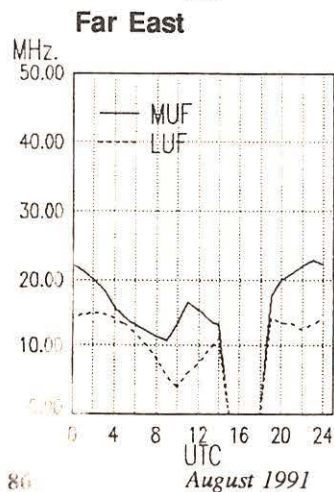
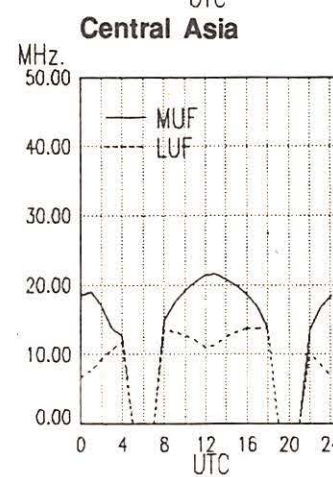
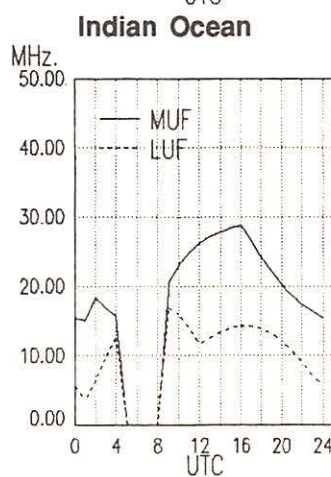
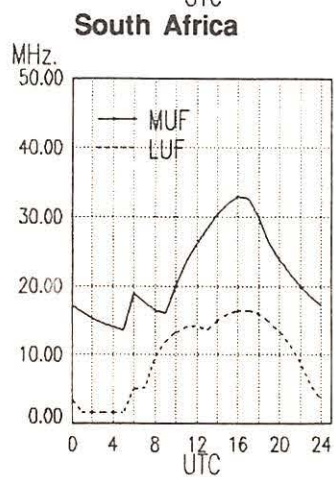
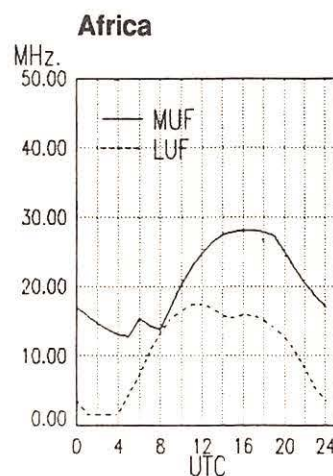
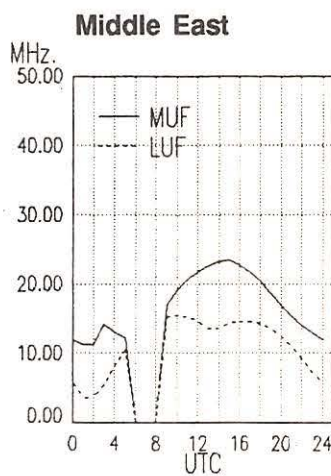
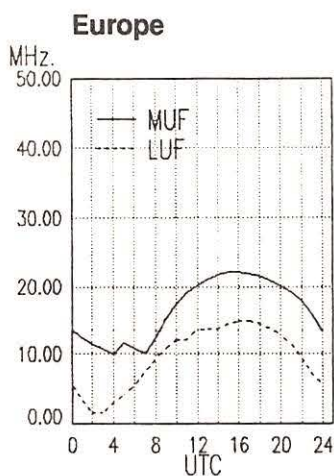
shortwave guide

How to use the propagation charts

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location.

Then look for the one most closely describing the geographic location of the station you want to hear.

Conditions for areas EAST of the Mississippi and ...



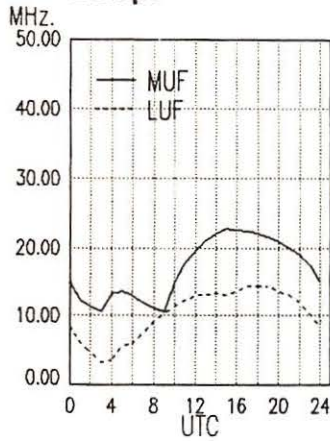
shortwave guide

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Usable Frequency (MUF) and the lower line the Lowest Usable Frequency (LUF) as indicated on the vertical axis of the graph. The strongest signals will be near the MUF.

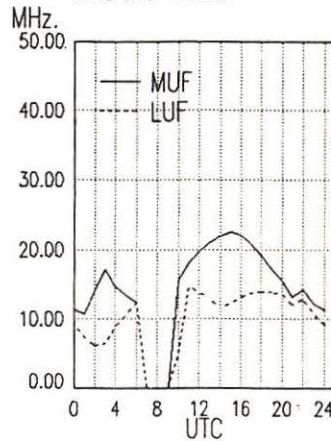
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good Luck!

Conditions for areas WEST of the Mississippi and ...

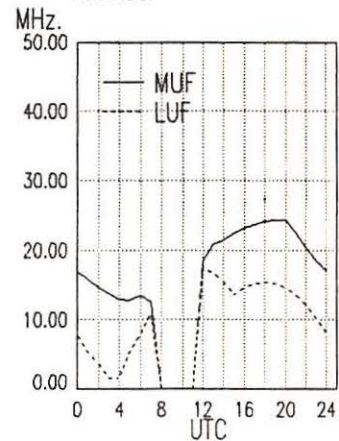
Europe



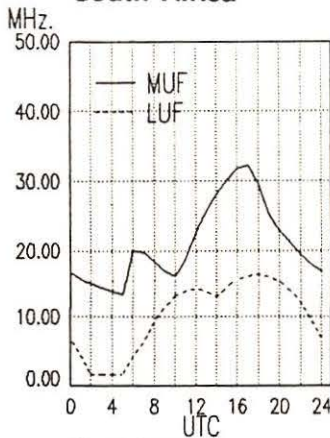
Middle East



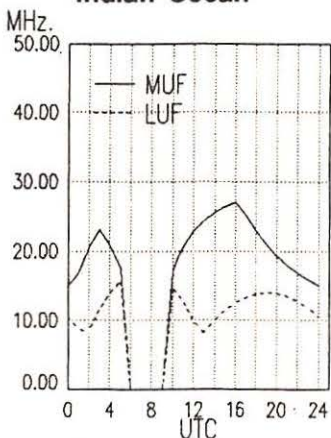
Africa



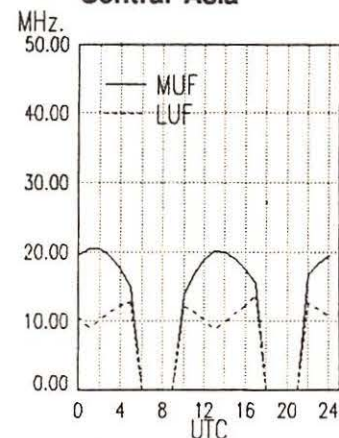
South Africa



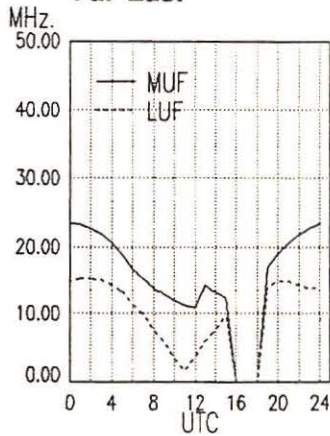
Indian Ocean



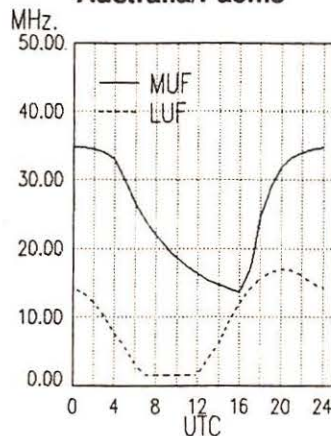
Central Asia



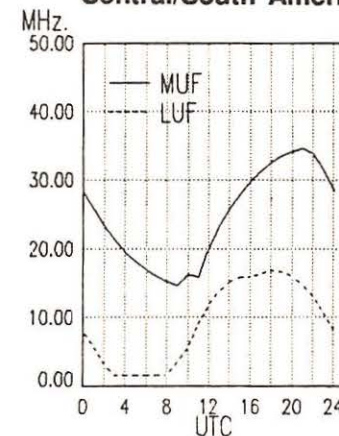
Far East



Australia/Pacific



Central/South America



Sony's Innovative Card-Tuned Portable: ICF-SW800



Bill Black

When this Sony ICF-SW700 (pictured next to the subcompact ICF-SW1S) was originally displayed at the *International Broadcaster's Conference* in September '90, it was promoted as Sony's latest attempt at foolproof operation.

Conventional wisdom suggests that if only shortwave radios were foolproof to operate, the public would buy them in droves. Sony, the most innovative company in the field, has toyed with this idea on and off for years.

Take the ICF-7700, sold outside North America as the ICF-7600DA. It has digital readout—nothing odd here. But it also has a digitized analog-type readout, right down to a fake needle and dial, so the technically timid won't be intimidated by something so outlandish as a digital frequency display.

It doesn't appear to have been an unalloyed success. After all, people are by now pretty well used to advanced technology in television sets, VCRs and the like. So why should world band be stuck in the Chubby Checker era?

Radio Originally Designed for Japanese Islands

Sony's latest attempt came about a couple of years ago when they decided that Japanese living

in the many outlying islands of Japan should be able to tune in domestic Japanese shortwave broadcasts without any fuss or bother. The result was the ICF-SW700, an AM/shortwave radio (no FM) just for these folks and nobody else. Unlike the '7700, it makes use of advanced technology.

In Japan, once a manufacturer makes something for the domestic market, it usually tries to find a way to make it succeed in the lucrative export market. The 'SW700 was no exception. After considering this for a couple of years, they changed the AM to FM and came up with the ICF-SW800.

Simple Operation, Advanced Technology

The 'SW800 is in many ways your average compact digital portable. It has the usual LCD for frequency and 24-hour clock/alarm display (alas, only one may be displayed at any given time), keypad tuning, 10 presets, and up/down frequency slewing in 5 kHz increments (50 kHz for FM).

As with some less-costly digital models, there's no tuning knob. However, there's a flip-out tilt panel, carrying strap, earphone/record/4.5V DC power sockets, a power switch with travel lock built in, a volume control...and a "card eject" button.

Tuned by "Credit Cards"

"Card eject?" Yes, because the set is also tuned by special credit-card sized cards, each side of which is dedicated to frequencies for a single station. So, if you want to hear the BBC World Service, you pop on the BBC card, then poke at its keypad until the station comes in.

The radio comes with three station cards, or six sides, in all. There's one side for the Deutsche Welle, another for Radio Moscow, two for the Voice of America and, of course, one for the BBC. The sixth side is for "free memories," ten presets you can use as you see fit for other stations.

Only one card can be used at any given time, so there is a slot on the side of the set for the most-used second card. The other card can be stored

within the battery cavity, which is less handy but better than nothing.

Interestingly, according to Sony the cards are not magnetically coded, and thus aren't susceptible to deprogramming by the set's speaker. Yet, the preprogrammed station frequencies may be changed at will by the operator. Quite easily, too.

Still, there are magnetic memories — for the clock/alarm. These use the regular 3xAA power batteries for backup, but they don't lose data until some 50 seconds or so after power loss. This not only gives you ample time to replace exhausted batteries, it also ensures that should the batteries lose contact momentarily when the set is jostled, data will remain intact — a big improvement over the ICF-2010/ICF-2001D in this regard.

Lacks 13 MHz Coverage

Most Sony sets cover the Japanese and "normal" FM bands, but the 'SW800 only covers the usual 87.5-108 MHz range, hardly surprising in that the 'SW800 is for export only. Shortwave coverage is 3700-17900 kHz — adequate for Japanese in outlying islands, perhaps, but shy the important 21 MHz (13 meter) band and the lesser 25 MHz (11 meter) and 3 MHz (90 meter) bands.

Reasonable Ergonomics and Performance

Performance isn't shy, though. Sensitivity is fairly good, and there's a reel-in "tape measure" outboard antenna to help. Selectivity (only one bandwidth) and audio quality are fair, and spurious-signal rejection good. No barn-burner, this, but it's just about what you'd expect for the price, save the lack of 21 MHz coverage.

Ergonomics are reasonable. The knurled volume control works very well, and programming the memories and clock is sensible and easily grasped. However, the keypad imprinted on each card uses an unorthodox two-row scheme — 1-5, 6-0 — that takes some getting used to.

Tuning Scheme Helps Newcomer, Initially

Thus, we get back to the main point: How well does the card-tuning scheme work?

Technically, well. You can see where a total newcomer to world band listening might find this system to be a useful de-mystifier for those first few days when the vagaries of shortwave might otherwise confuse.

But once you get the essential hang of shortwave, they become something of a novelty, even an annoyance. After all, while the concept is straightforward enough, it requires the operator to fiddle about, like a casino croupier, with a bunch of cards just to tune in a station. It would seem better to have had dedicated pushbuttons, as on the Sony ICF-2010/ICF-2001D — one per channel. After all, these and the 24-hour clock can always be preprogrammed at the factory, and would be handier to use for newcomer and experienced listener alike.

Ironically, Sony's forthcoming replacement for the ICF-2010, the ICF-SW77, no longer has those handy pushbuttons. Although they fulfill their function almost perfectly, at first glance look "complicated." In the real world of images, marketing imperatives and cost cutting, they have been deep sixed.

Nice Try, No Cigar

In all, the \$184.95 ICF-SW800 appears to be a case of "nice try, but no cigar." In the United States, it's currently sold exclusively through The Sharper Image (800/344-4444 or 415/344-4444), one of the world's most successful distributors of yuppie novelties. For this market, it makes sense. But on a practical plane, it falls short.

Yet, who knows? Many a concept with little practical sense, but with excitement or its own unique stamp, becomes a smashing success in the real world. Perhaps this will happen with the 'SW800 as well. In any event, Sony is to be commended for having the creativity and daring to bring out such an innovative product.



PASSPORT'S "RDI White Paper" equipment reports contain virtually everything found during IBS' exhaustive tests of premium receivers and antennas. These reports are available in the U.S. from Universal Shortwave, EEB and DX Radio Supply; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland; in the U.K. from Lowe Electronics stores; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list, send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

NOW YOU'RE TALKING!

The Code-Free Ham License is Here

Enjoy all Amateur Radio privileges above 30 MHz without having to pass a code test. All you have to do is pass a 55-question exam on basic radio and the FCC regulations. ARRL's new book, **Now You're Talking** makes understanding what is required on the test a snap! And there are exams given all over the country every weekend.



Just think how much fun you'll have communicating through repeaters, enjoy Sporadic E skip and worldwide communications on six meters when conditions are right. There's satellite communication and you can even talk to Astronauts and Cosmonauts in orbit. Enjoy friendly local communication both direct and through repeaters. Help with disaster drills and the real thing! Sound like fun? It is! Order your copy of **Now You're Talking** below: Enclosed is \$19 plus \$4 for shipping (a total of \$23) or charge \$23 to my () VISA () Mastercard () Discover () American Express

Signature _____
Acct. No. _____
Good from _____ Expires _____
Name _____
Address _____
City _____ State _____ Zip _____ MT

THE AMERICAN RADIO RELAY LEAGUE
225 MAIN STREET
NEWINGTON, CT 06111

Realistic PRO-35 Handheld Scanner

You say it looks familiar? The resemblance to the popular Uniden BC100XLT and BC200XLT is more than superficial, but even though the Realistic PRO-35 can slip perfectly into the Bearcat carrying case, and even though someone trained on the Bearcat could switch on the PRO-35 and operate it blindfolded, there are differences.

Several software commands, the power supply section and even the cosmetics of this new Radio Shack product differ from the BC100XLT. The specifications which are unique to the Realistic are:

- any channel may be selected for priority;
- one monitor feature is provided to store a search-discovered frequency without committing it to a memory channel;
- the battery pack may be removed and charged separately while the host scanner can still be operated from a 12 VDC power source;
- search keys are provided for upward or downward search;
- keyboard "beep" annunciator;
- tactile-feedback keys;
- "CH", "MHz", "kHz" legends printed below display;
- standard 1/8" mini phone jack is provided for earphone monitoring;
- the AM air band is 108-136 MHz;
- a belt clip is provided;
- two-tone gray and black cabinet;
- the battery pack is not interchangeable.

The other specifications are not unique to the 35, but are shown in the accompanying table..

The PRO-35 utilizes both a crystal and ceramic filter in its IF scheme to produce sharp



adjacent-channel rejection. The stiff, snappy feel of the keys is reassuring during data entry.

The keypad bezel is a clear-plastic laminate making legends unusually sharp and clear—easy to read even though they are small.

Fun and Games

If you wish to load the factory preset frequencies which were used for test purposes, turn the radio off; then, while simultaneously pressing MANUAL, 2 and 9, switch the radio on. After a few seconds a "click" from the speaker signifies that the first 14 channels have been autoloading with test frequencies.

To erase all memory channels, repeat the procedure above, but substitute the SCAN key for

Specifications

FREQUENCY RANGE: 29-54, 108-174, 406- 512 MHz

SENSITIVITY: AM air 1.6 μ V; FM low 0.5 μ V; FM high/UHF 0.7 μ V

MEMORY CHANNELS: 100 in ten banks

SCAN/SEARCH RATE: 14 steps per second

SELECTIVITY (-6/-50 dB): 22/30 kHz (24 kHz modulation acceptance)

IF REJECTION: 60 dB high band

SPURIOUS SIGNAL REJECTION: 50 dB low and high band

SQUELCH SENSITIVITY: 1 μ V or better

CONVERSION SCHEME: Dual conversion, 10.85 MHz and 450 kHz

AUDIO OUTPUT: 400 mW

MANUAL. An internal backup battery will hold memorized frequencies (that you haven't erased) for up to an hour with the main battery pack disconnected.

The rest of the functions are quite conventional and quite satisfactory. We were pleased at the audio quality—loud, crisp and undistorted.

Sensitivity was identical to its competition. Keyboard commands are simple and "user friendly." For scanner users on the go who are looking for high performance at reasonable cost, and don't need 800 MHz band coverage, the PRO-35 would make an excellent choice.

The Realistic PRO-35 handheld, programmable scanner is \$229.95 from Radio Shack dealers.

Computer Aided Scanning

a new dimension in communications from Datametrics



Now you can enhance your ICOM communications receiver through a powerful computer controlled system by Datametrics, the leader in Computer Aided Scanning. The system is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

The Datametrics Communications Manager provides computer control over the ICOM R7000 or R71A receiver.

Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.

Innovative hardware design requires no internal connections.

Comprehensive manual includes step by step instructions, screen displays, and reference information.

Extends ICOM capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.

Overcomes ICOM limitations such as ineffective scan delay.

Datametrics, Inc

R7000 system \$349
R71A system \$349
Manual and demo disk \$15

Requires ICOM receiver and IBM PC with 512K and serial port. The R71A version also requires an ICOM UX-14.

Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr., Suite 8A, Coconut Grove, FL 33133. 30 day return privileges apply.

WHAT IF MY MT IS LATE?

If your copy of MT doesn't show up on your doorstep, please wait until the 10th of the month before calling us. We can replace up to two issues per year, but give the Post Office a chance to deliver it first!

Reducing Scanner Overload

A severe overload problem with his PRO-34 scanner prompted David Ricker of Tucson, Arizona, to come up with an inexpensive cure using a Radio Shack attenuator.

Dave purchased from his local Radio Shack dealer a 6 dB attenuator (#15-1257), an RD adaptor (#278-251) and a BNC plug (#278-256). Attaching these in series with his antenna, Dave enjoyed a remarkable improvement for less than \$7.

Years ago, the chief engineer at Electra (then manufacturer of Bearcat scanners) replied when I asked him about preamplifiers for scanners, "They don't need preamplifiers; they need attenuators!"

In strong signal areas, he certainly was correct.



IT'S NICE TO FOOL MOTHER NATURE!



SPECIFICATIONS

Attack time	Zero to 10ns, depending on induced waveform.
Surge current	8/20 us, 20,000 amps
Operating Temp.	-65 to 125 Celsius
Discharge inductor	Toroidal, insulated.
Back-EMF GDU	600-1000V, ceramic body construction, G.I. Clare
VSWR	Less than 1.1:1 over rated spectrum
Insertion loss	Less than 1db
Impedance	50-75 ohms
Hardware	16-8 stainless hardware 8-32 stainless steel ground lug, 1/8" thick 5032-H32 case, 6-32 mounting hardware
Finish	Natural aluminum
DC resistance across	47K to 250K ohms, resistive
Capacitive effects	Less than 1pf
GDU specs.	Meets REA PE-80 IEEE 587 CGITT K12
Environmental	Recommended for indoor service at input bulkhead to station's grounding system. May be used outdoors if protected from direct rain exposure.
Warranty	One year standard

MODELS, PRICES

HF-VHF (1.5 TO 225 MHZ)	
MODEL 301/U	300W, SO239a \$29.95
MODEL 301/N	300W, N CONNS. \$31.95
MODEL 301/B	300W, BNC \$29.95
MODEL 301/R	300W, RCA PIN \$29.95
MODEL 303/U	5KWPEP, SO239a \$34.95
MODEL 303/N	5KWPEP, N CONNS. \$36.95
CATV, 75 OHMS	
MODEL 310, RCV ONLY, "F" CONNS.	\$26.95



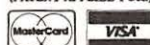
MADE IN THE U.S., WHERE MOST OF THE WORLD'S FINEST PRODUCTS ARE DESIGNED AND BUILT.

Unlike any other lightning protection device for coaxial transmission lines, I.C.E.'s Model 300 series requires no pre-determined voltage to develop between conductors before voltage suppression begins. Units are constant drain, capacitor-blocked, non-DC passive, and each relies on a heavy discharge inductor paralleled with a ceramic gas-discharge assembly to provide a lightning-fast trap system for induced voltages.

Virtually indestructible, 300 series arrestors are built in 1/8" thick standard chassis enclosures with dual stainless steel mounting/grounding screws.

Over a thousand satisfied customers have chosen from the numerous models & connector choices offered. Each is packed with mounting hardware, storage box, and 4-page owner's manual.

(PATENT APPLIED FOR.)



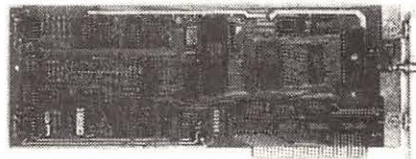
MODELS, PRICES

VHF/UHF (30-500MHZ)	
MODEL 302/U	300W, SO239a \$29.95
MODEL 302/N	300W, N CONNS. \$31.95
MODEL 302/B	300W, BNC \$29.95
MODEL 302/T	300W, TNC \$29.95
MODEL 304/U	1KW, SO239a \$34.95
MODEL 304/N	1KW, N CONNS. \$36.95
TVRO SATELLITE TV	
MODEL 315, DC PASSIVE, "F" CONNS.	\$24.95

1-800-ICE-COMM

Order Line 1-800-423-2666
Main Office (317) 545-9418
Customer Service (317) 547-1398
Fax (24 hours) (317) 545-9645
Mail P.O. Box 18495
Indianapolis, IN 46218

PC + M1000 = SW Excitement



Turn your IBM computer (or clone) into a powerful intercept device! The Universal M-1000 Decoder Card requires just one slot in your PC. Your computer can open up a new world of listening (and seeing) opportunities! You can decode standard modes such as Morse Code, Baudot RTTY and Sitor A/B. Advanced diplo.-military modes such as ARQ-M2, ARQ-E and ARQ-E3 are also supported. ASCII and Packet modes are even featured. For FAX reception (only) your computer must have either an EGA or VGA monitor (color or mono). The video quality of your FAX intercepts will amaze you. Advanced FAX imaging includes false-color and zoom features. FAX images as well as text traffic can be saved to disk for later retrieval or analysis. Despite the sophistication of this device, operation is easy through on-screen menus, status indicators and help windows. A new *datascope* feature operates in both RTTY and FAX modes. The M-1000 comes with an informative manual and software on both 3 1/2" and 5 1/4" diskettes. **Only \$399.95 (+\$5).**

UNIVERSAL RADIO

1280 Aida Dr. Dept. MT
Reynoldsburg, OH 43068
☎ Toll Free: 800 431-3939
☎ In Ohio: 614 866-4267

☛ Call or write to receive your **FREE** 92 page catalog.

Universal has been serving radio enthusiasts since 1942.

Transient Suppressor and AC Line Filter

Man-made or storm related interference and voltage spikes are often present on the ac line that enters our homes. The noise pulses generated by household appliances and shop equipment are carried on the power line and may find their way into our receivers and other items of electronic equipment, which can impair shortwave reception.

Power line transients which enter the equipment are capable of serious damage. These voltage spikes can ruin power supplies, computers and all manner of amateur or SWL equipment.

Fortunately, these harmful transients can be suppressed with metal-oxide varistors (MOVs) at reasonable cost. The circuit in Figure 1 functions not only as a transient suppressor, but as an ac line filter. You can construct the circuit easily, and the components are not expensive. Conversely, you may need to pay a substantial amount of money if you purchase a commercially-made equivalent device.

Filtering the AC line

C1, C2, C3, L1 and L2 in Figure 1 form a low pass RF filter. You may think of this

network as a double pi network. A common name for this circuit is the "brute force line filter." It is designed to attenuate all frequencies above 400 kHz.

It does not impede the passage of 60-Hz ac line energy. In fact, it represents a two way street, so to speak. It not only keeps unwanted RF energy from entering your station equipment, but prevents RF energy from your amateur transmitter from entering the ac line. The latter situation has the potential of causing RFI and TVI when your transmitter is operating.

The two pi network filters are designed for a line impedance of 50 ohms with a loaded Q of 50. The impedance is not a critical factor for this circuit. Most ac house wiring is on the order of 50 to 75 ohms, depending upon the wire size and spacing in the Romex and ac line cords.

The wire gauge for L1 and L2 must be heavy enough to safely pass the required ac current without heating and causing a voltage drop. I use no. 14 enameled wire for currents up to 10 A. The resistance of the windings is minimized by winding the coils on Amidon

Associates ferrite toroids (No. FT-240-61) which have a permeability of 125.¹

Each coil has an inductance of 16 uH. This calls for 16 turns of no. 14 enameled wire on each toroid core. The core should first be wrapped with two layers of teflon tape. I use plumber's thread-sealing teflon tape. It is available in small rolls at most hardware stores. The tape helps prevent the sharp edges of the toroid core from abrading the wire insulation and insures against voltage breakdown from the winding to the core.

It is important that you use 1000-V disc ceramic capacitors for C1 through C4. Hosfelt Electronics sells dual 0.01 uF, 1000-V capacitors which are excellent for the application.²

Transient protection

MOV1, MOV2 and MOV3 are used to clip voltage spikes that may enter the equipment via the 120-V ac line. These units exhibit very high resistance until the applied voltage reaches 250 RMS. At this time the resistance drops markedly for the duration of the spike, thereby suppressing it.

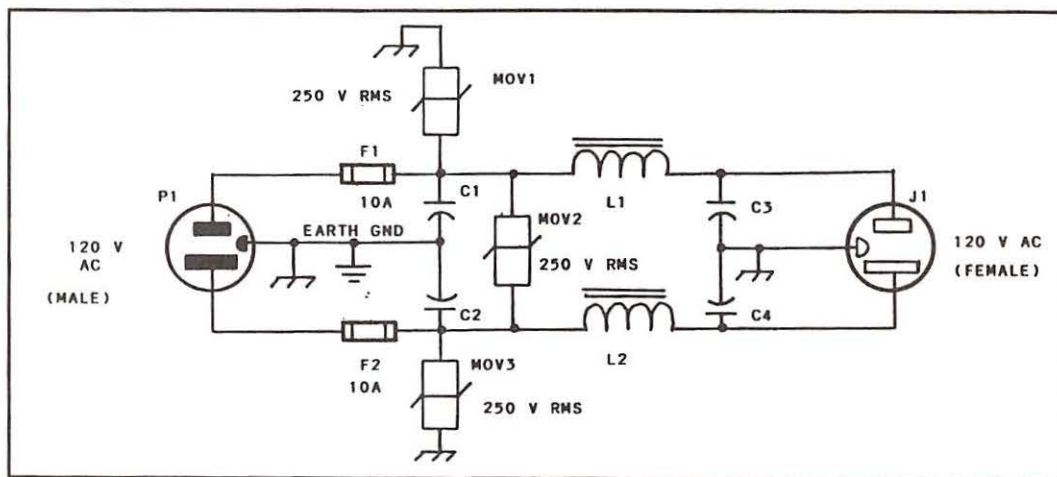


Figure 1 : Schematic diagram of the line filter and transient suppressor. C1-C4, incl. are 0.01-uF, 1000-V disc ceramic (see text). F1 and F2 are 10-A fuses in standard fuse holders. 10-A circuit breakers may be substituted. L1 and L2 are 16-uH toroid coils (see text). MOV1-MOV3, incl. are described in the text. P1 is a male chassis-mount, three terminal ac plug. J1 is a female three-terminal, chassis-mount AC socket.

If your line voltage is no greater than 122 V you may use 130-V MOVs. This offers lower voltage spike protection. Hosfelt Electronics² sells a 30-joule MOV (no. V130LA10) for \$1. A 275-V, 30-joule MOV (no. V275LA15A) is available for \$1.25.

The cost of this project can be minimized by using only MOV2. But, MOV1 and MOV3 offer greater all-around protection. The extra \$2 is a prudent investment.

The cost can be reduced also by eliminating F2. I like having a fuse in each side of the ac line, and hence the two units in Figure 1.

MOVs can become open-circuited after repeated exposure to high voltage spikes, such as those that can occur when lightning hits the power line. Good preventive maintenance calls for checking the MOVs with an ohmmeter every three to six months. A good MOV will have a reading in the high megohms when it is okay.

Construction notes

Build your filter/suppressor in a metal box of some convenient size. You will want to use more than one female ac outlet jack if your station has several items that need protection. Simply parallel as many outlets as you need. This will dictate the box size. Do not allow L1 and L2 to touch the walls of the metal box.

An earth ground needs to be attached to the filter box if proper filtering is to occur. You may use the cold-water pipes as a ground. Better still, single or multiple eight-foot ground rods can be driven into the soil near your shop or radio room for use as a quality earth ground.

Use heavy wire (short as practicable) between the filter and the earth ground. Shield braid from RG-8 coaxial cable works well for the connecting conductor. A 1-inch-wide length of flashing copper is good also.

You can elaborate when building the Figure 1 circuit by installing a SPDT toggle switch between F1/F2 and the junctions of C1/MOV1 and C2/MOV3. This will enable you to turn off the station gear and filter box when you are away from home or when an electrical storm occurs. A neon lamp may be added to indicate when the switch is in the ON position.

Tag ends

You may wish to build two or three of these filter/suppressors. I use one to protect my hi-



THE SPOOK BOOK
Mike Tyson

Forbidden Technologies

The Spook Book deals head on with Electronic Surveillance, Countermeasures, Lock Picking, Rearming Hand Grenades, Amateur Rocket Weapons and much more. Favorably reviewed. 258 pages, 8.5x11, soft bound..... \$ 34.95 postage paid



NOW HEAR THIS!
ELECTRONIC
EAVESDROPPING
EQUIPMENT
DESIGN
Mike Tyson

Surveillance Audio Amplifiers

SAA is a Surveillance Specialist cookbook. Covering any and all subjects concerning Audio Surveillance with no exceptions. From wiretapping to audio filtering, this is a must have publication. 277 pages, 8.5x11, soft bound..... \$ 34.95 postage paid



THE CUCKOO'S EGG
Mike Tyson

Now Hear This!

Electronic Eavesdropping Equipment Design

Full of detailed professional quality schematics and plans for all types of Electronic Surveillance Equipment. Excellent book! 110 pages, 8.5x11, soft.....\$ 34.95 postage paid

The Cuckoo's Egg

Tracking a Spy Through the Maze of Computer Espionage

A true story you won't be able to stop reading. #1 "Best Seller" 325 pages, 6.5x9.5, hard bound..... \$ 24.95 postage paid

Perstor Systems.....High Capacity Hard Drive Controllers

Perstor Systems line of high capacity hard drive controllers allow you to increase the capacity of any MFM hard drive by 90%. A Seagate ST-4096 (80 meg.) drive will format to 146 megs. Installation available...No one beats our price. **CALL TODAY!**

Factory Distributors of:

- * Cap-Stun, non-lethal weapons * Israeli Gas Masks * Z-Tool, lockout tools
- * Forbidden Technology publications * Surveillance Electronics
- * Countermeasures Electronics * Perstor Systems, hard drive controllers

Licensed and Certified Counterintelligence Technicians on Staff

Send \$3.00 for Catalog (Refundable with order)

Advanced Electronic Technologies

Suite 173, 5800-A No. Sharon Amity Rd., Charlotte, NC 28215

Order Toll Free 1-800-543-5207 Info/Tech (704)545-2681

FAX (704)545-9061 Computer BBS (704)545-7076

fi and TV center. Another unit is a permanent part of my ham station. A third box is used for my word processor. I have found that the line filter at the TV set has eliminated that annoying 15.750-kHz buzz (TV birdies). Until the filter was installed I not only had TVI from my transmitter, but the TV birdies were highly disruptive during reception of the 160- and 75-meter bands.

References

1 Amidon Associates, Inc., P.O. Box 956, Torrance, CA 90508. Phone 213-763-5770. Catalog available.

2 Hosfelt Electronics, 2700 Sunset Blvd., Steubenville, OH 43952. Phone 800-524-6464 for catalog orders.



A Basic Remote Controller

You'd think it would be a simple matter to add a remote controller to the keyboard of a scanner. After all, a keyboard is little more than a bunch of push-button on-off switches. Heck, all it would take is a batch of remote switches wired in parallel with the ones on the keyboard via a long cable and there's your controller. Right? Wrong. Well, sort of, anyway

The Theory

To control a few of the scanner's functions by a remote wired controller is not difficult but it can't be done the way you might first think, because the scanner's keyboard is connected directly to the Central Processor Unit (CPU) and all those switches are located only an inch or two from it. When the length of the switch line is more than a few inches, the CPU becomes vulnerable to noise, capacitive loading and other nasty, disagreeable effects. The CPU will lockup and/or some functions may not work.

So, we have to isolate the remote controller and its associated switches and long cable from the CPU and keyboard, and still provide the same switching action as the keyboard. No problem. We need one chip and only a few parts to remotely control up to three functions.

The neat little 4066 CMOS chip we're using here contains four electronic (not mechanical) SPST switches. Take a moment's look at Figure 3, the Pinout for the 4066 chip, and you'll get a pretty good idea of how it works. Each of the four switches on the chip has three pins: In, Out, and a Control pin, to account for 12 of the 14 pins. Another pin is for ground and the last one is for +5-Volt power.

A switch is open when its respective control pin has no voltage applied. When +5v is applied to a control pin, its corresponding switch segment closes. Remove the +5v from the control pin and the switch opens again. Each switch is isolated from and independent of the rest.

Pretty simple, actually. The 4066 chip isn't available from Radio Shack's stock, but they can order one for you. The CD-4066 is readily available from most electronic supply firms.

Scanner keyboards are arranged in an expanded "tic-tac-toe" grid or matrix consisting of columns and rows. The PRO-2004/5/6 uses a 4-row by 8-column matrix. The functions to be remotely controlled (manual, scan and delay) are arranged in one column and three rows (4 wires).

To achieve the necessary isolation of the remote controller from the keyboard, the 4066 chip will buffer the one "column wire" and the three "row wires," a pair each of which will be triggered by one of the three external control switches on the remote control box. See Figure 2 for a pictorial of the PRO-2004/5/6 keyboard switch matrix.

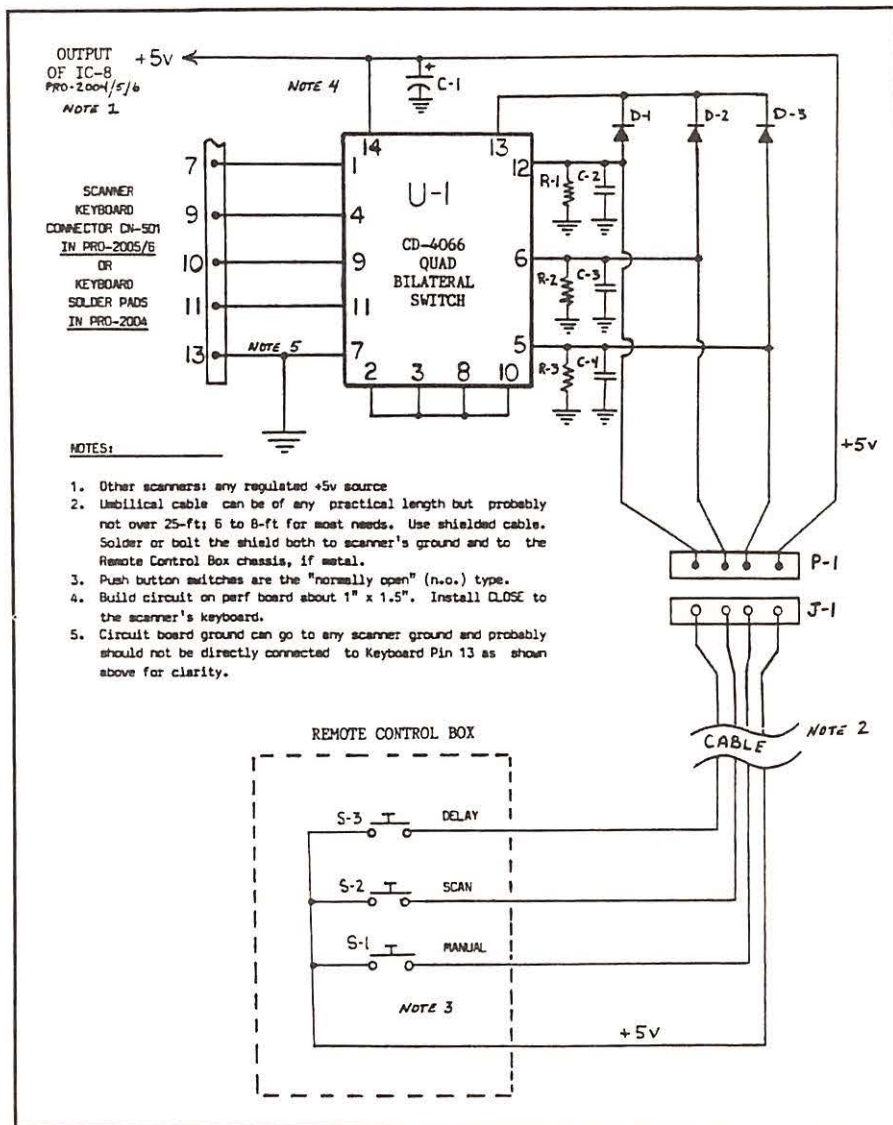


Figure 1: Remote Controller Schematic Diagram

This article and Figure 1 are designed for the PRO-2004, PRO-2005 and PRO-2006 scanners, but there's no reason why it can't be applied to other scanners and equipment that use a matrix keyboard for control or data entry. As depicted here, the principle is sound and functional for almost anything that requires only a few remote control switches.

If you want total control of your scanner, like all 29 keyboard functions, this approach might not be the best because of the necessary eight or nine 4066 chips and the rather heavy umbilical cable for over 30 control wires. As it is, the method shown will control up to three functions using four wires. If you use the specified shielded 9-conductor cable, you can add another three functions of choice by duplicating the circuit and process shown here for seven wires.

Making the Mod

Okay, enough theory. Before we get started, though, it is highly recommended that you get the service manual for your scanner. It will help you locate and identify areas in which you will be working. For the PRO-2004/5/6, the service manual can be ordered from any Radio Shack store or direct by calling 800-442-2425.

First, build the simple circuit shown in Figure 1 on a small piece of perf board and install it as close as possible to the keyboard. For the PRO-2004, install the new board on the back of the keyboard PCB inside the sloped front panel and solder its output wires from U1, pins 1, 4, 9 and 11 directly to keyboard solder pads 7, 9, 10 and 11 respectively. (Note: a black wire is at keyboard solder pad #13.) Length of these wires should be a couple of inches at the most.

Table 1
Basic Remote Controller Parts List

CKT Symbol	Quan	Description	Radio Shack Catalog No.
U1	1	CD-4066 Quad Bilateral Switch or 74HC4066 Quad Bilateral Switch, or ECG or NTE 4066B	See text See text See text
C1	1	2.2 uF/35VDC Tantalum capacitor	272-1435
C2-4	3	0.1-uF/50vdc monolithic capacitor	272-109
D1-3	3	Switching diode, silicon, 1N4148 type	276-1122 or -1620
J1	1	Jack, In-line, DIN, 8-pin	274-027
P1	1	Plug, In-line, DIN, 8-pin	274-026
R1-3	3	100-k, 1/4-watt resistor	271-1347
S1-3	3	Switches, push button, SPST, normally open	275-1547 or -1556 or -1571 or -1549
Misc	?-ft	Shielded LAN cable, 9-conductor	278-775
Misc	1	Metal or plastic box for controller	See text
Misc	?-ft	Hookup wire (salvage sme excess from the above 9-cond cable (287-775))	
Misc	1	Perf board: IC-spacing cut 1" x 1.5"	276-1395
Misc	1	Socket, IC, 14-pin DIP for U1 above	276-1999
Misc	?	Basic electronic hand tools, soldering iron, solder, cable ties, hot glue or epoxy, etc.	

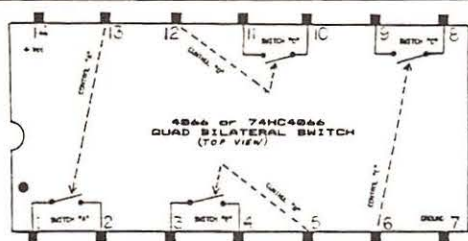


Figure 3: Pinout for the CD-4066 Quad Bilateral Switch Clip

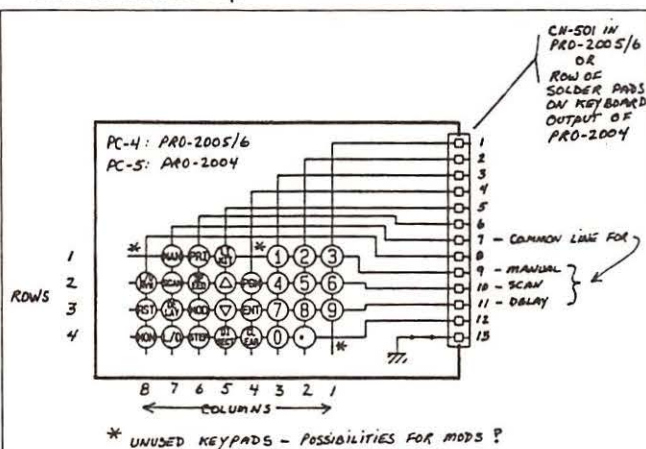


Figure 2: PRO-2004/5/6 Keyboard Switch Matrix Diagram

For the PRO-2005/6, install the new board on its side on the main receiver board just below the logic/CPU keyboard connector. Solder about one-half inch of solid, bare #18 gauge copper wire (RS #278-1291) to the free end of each output wire from U1, pins 1, 4, 9 and 11. Then plug, not solder, these wire ends into the keyboard connector (CN-501) at pins 7, 9, 10 and 11 respectively. Looking down onto CN-501 from the top, Pin 1 is at the extreme right and pin 13 is at the extreme left.

The power and control lines from the board (U1, Pins 5, 6, 12 and 14) to the remote controller should be neatly routed around the perimeter of the scanner through a one-quarter inch hole on the

rear panel. These wires should protrude from the rear maybe two or three inches at the most and then terminate at the in-line plug for quick and easy disconnects when the remote controller is not needed.

A mating connector for this plug should be soldered to one end of the desired length of shielded umbilical cable, 6 to 8 feet typical, and maybe a maximum 25 foot. The other end of this cable should be "hardwired" to the remote control box as shown in Figure 1.

Neither the box nor the circuit wiring are critical provided you adhere to the circuit design. You are free to apply some ingenuity and creativity in this project. The box should be metal, but plastic will do if you can't find something better. Radio Shack doesn't have a really great box for this purpose, but several of their offerings can be pressed into service. I like the sloping metal box from LMB, model MDC-642, available at some electronic supply firms. This box will hold lots of other things besides just some remote control switches: Maybe a CTCSS Decoder? DTMF Decoder? And more.

Solder or bolt the shield of the umbilical cable to the metal frame just inside where it enters the rear of the scanner. If you use a metal box, then solder or bolt the cable's shield to a handy spot just inside where it enters the box. Be sure to solder the cable's shield to the metal shells of both the plug and the jack.

That should do it for this month. Please let me know your success with this project as well as anything new in the way of modifications or

New AOR Scanner

1000 Channels.
8-600MHz,
805-1300
MHz



AR1000

Total Price, Freight Prepaid
(Express Shipping Optional)

\$499

- Continuous coverage (except UHF TV 600-805)
- AM, FM and wide band FM tuning modes
- 10 Scan Banks, 10 Search Banks
- Selectable Priority Channel
- Selectable Search Increments, 5-955KHz
- Permanent memory backup
- 25 Day Satisfaction Guarantee. Full refund if not Satisfied
- No Frequencies cut out
- All normal accessories included
- Size: 6 7/8"H x 1 3/4"D x 2 1/2"W Wt. 12 oz.

ACE
COMMUNICATIONS

10701 E. 106th St. Indpls., IN 46256
Toll Free 800-445-7717



Visa and Mastercard
(COD slightly higher)



FAX (317) 849-8794

World Probe

\$29.95

World Band Scanner Antenna

+ \$3 P & H

- Cuts Noise • Improves Reception • Indoors or Out •
- Works with all World Band Portables and Scanners •
- Sleek 6-ft Probe with Integral 25-ft Low-Loss Shielded Feedline •
- Fully Insulated and Weather Sealed • Decorator White Design •

AntennasWest Box 50062-M
801 373 8425 Provo, UT 84605

FREE Storage Pouch
& Universal Connector Kit

improvements to VHF-UHF scanners and shortwave radios. We're here to serve.

Sources::

Electronic parts

Digi-Key Electronics, Highway 32 South
P.O. Box 677, Thief River Falls, MN 56701
800-344-4539.

Jameco Electronics, 1355 Shoreway Rd.,
Belmont, CA 94002, 415-592-8097

Cabinet enclosures

LMB, Inc., 2946 E. 11th St., Los Angeles, CA
90023, 213-261-0382.



Name that Antenna

I'm sure everyone has eyed antenna towers loaded with antennas like a tree hung with Christmas balls. Recently Ronald Bridges of Eden, North Carolina, asked us to print a picture of an antenna tower with its various antennas identified and discussed, so here goes.

Antenna Sampler

Figure 1 represents a typical metal tower with a number of smaller antennas mounted on it. At the top is a long pole-like antenna. Its vertical orientation is a giveaway to the fact that it is a vertically polarized antenna, usually constructed of fiberglass with wire elements inside.

Often this will be a collinear antenna, a name which means its elements are all in a straight line. The antenna is usually made to have a fair amount of gain. Depending on its length, you may see such collinear antennas designed for the VHF or UHF range, for use in nondirectional coverage by utilities or for amateur radio repeaters, for example.

Sliding down the tower a bit we come to the second antenna which would appear to be a Yagi-Uda beam. Mounted with its elements vertically oriented, it is also vertically polarized. The smaller examples of this type of antenna are UHF models, while the somewhat larger ones are for the VHF bands.

Sporting several elements, this antenna will have fair to high gain. Being a beam, it is likely to be utilized for point-to-point communication such as a telemetry circuit for sending in data from an unmanned weather station, small unmanned hydroelectric plant, or for voice communication between government offices.

If we wanted, we could turn the elements 90 degrees so that they were horizontally polarized. You have probably noticed that antennas in both the VHF and UHF TV broadcast bands are horizontally polarized in this manner. This is to reduce the amount of man-made noise interference on TV programs.

On the next level down the tower on the left we encounter our old friend the groundplane antenna. This little antenna is found in all sorts of applications and is generally a low gain, nondirectional performer.

But, mounted next to the metal tower, it can exhibit directionality and a modest amount of gain. This is because the tower acts as a reflector, reflecting some of the antenna's radiation back from the tower in the direction of the antenna or away from the tower.

You will find these antennas serving utility communications, government agencies, amateur simplex and repeater communications and more.

This Antenna Can Dish it out:

Now notice the bowl or dish-shaped antenna next on the tower. This sight is very common today; dish antennas are used for everything from satellite communications to cross-country relay links or cross-town cable-TV links.

Innately quite high in gain due to the signal-gathering and focusing ability of the parabolic dish reflector, their polarization depends on the orientation of their feed antenna, the little antenna located at the focal point of the reflector dish. Often this feed antenna is the open end of a wave guide. You can see the feed antenna on this particular dish held by a support near the centerline of the dish as shown in Figure 1.

Immediately below the dish antenna just discussed, you can see a flat plate mounted at an angle to the tower. The dashed line represents a signal coming in to hit this plate and reflecting down to a dish antenna on the ground below.

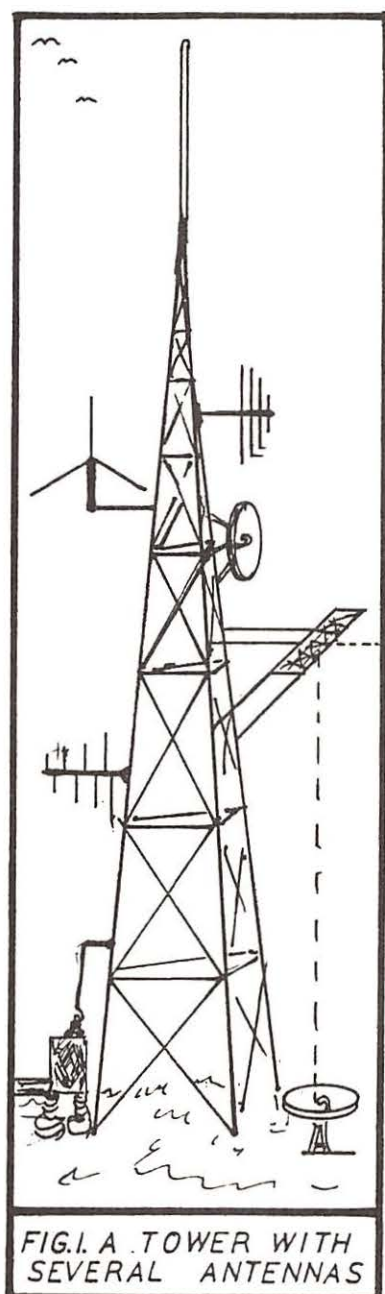
Such arrangements are sometimes called "periscope" antennas due to the similarity of their function to the function of an optical periscope. Installing the dish on the ground saves the expense and trouble of putting a feedline up the tower and also avoids signal loss which would occur in that length of feedline.

The remaining antenna, the last one on the lower left of the tower, is the only broadband antenna on the tower. A beam with decent gain, this is a log-periodic antenna. Log-periodic antennas are used where a very wide range of frequencies must be covered with one antenna. Otherwise its applications are similar to the Yagi-Uda beam higher on the tower.

Lest We Forget:

The cable running to the tower near its bottom on the left side is a feedline, which reminds us that the support tower itself, properly fed, can be an antenna, and frequently is used as one. Such a tower would provide an essentially nondirectional radiation pattern with vertical polarization and low gain.

Towers of this sort are often utilized by small AM broadcast stations, and on the HF bands by government agencies.



So there you have the cook's tour of one antenna tower. As you learn to identify more antenna types, it's fun to see how many you can identify around your town, and what their appearance tells you about the type of communications they serve.

RADIO RIDDLES

Last Month:

I mentioned that today more people than ever before are enjoying radio as a hobby and as a means of communication for both business and pleasure. The riddle then posed was "Where did radio technology come from?"

Well, James Maxwell predicted the existence of electromagnetic waves, including radio waves, before Heinrich Hertz first demonstrated convincingly to the scientific world that such waves do exist. Others like Italy's Marconi, Russia's Poppov, America's Lee DeForest and Nicola Tesla developed these concepts into workable, if primitive, communication systems.

Last month I mentioned in this column an inventor sometimes credited with inventing radio: Mahlon Loomis. The June issue of *Monitoring Times* carried a report that one of Nathan Stubblefield's descendants feels so strongly that Stubblefield invented radio that they will sue publishers publishing books which contain claims to the contrary.

There are yet other inventors recorded in the annals of history that have variously been given credit for being the first to devise the beginnings of wireless or radio technology. So where did today's radio technology come from?

Obviously many people have contributed to it in many ways, beginning with the early pioneers and continuing through the development of the vacuum tube, transistor, integrated circuit, and microprocessor. It has been independently invented and developed at various points in time by many different inventors. Even Thomas Edison had a patent on something he called "etherial force," which was sufficiently convincing that Marconi paid him a handsome sum of money for rights to that patent.

So today we enjoy the fruits of the labor of a multitude of inventors, engineers, and scientists who have produced the technology which today we call "radio."

This Month:

In simple terms, what is the simple relationship between a longwire antenna, a V-antenna, and a rhombic antenna?

Find an answer to this month's riddle, and much more, in next month's *Monitoring Times*. Till then, peace, DX and 73.



World's Most Powerful CB and Amateur Mobile Antenna*

Lockheed Corp. Test Shows
**Wilson 1000 CB Antenna Has
58% More Gain Than The
K40 Antenna (on channel 40).**

In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

Guaranteed To Transmit and Receive
Farther Than Any Other Mobile
CB Antenna or Your Money Back**
New Design

The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

Why Wilson 1000 Performs Better

Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 3000 watts of power.

The Best You Can Buy

So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 177 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

*Inductively base loaded antennas
**Call for details.

Lockheed - California Company

A Division of Lockheed Corporation
Burbank, California 91520

Aug. 21, 1987

Wilson Antenna Company Inc.
3 Sunset Way Unit A-10
Green Valley Commerce Center
Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #870529

We have completed relative gain measurements of your model 1000 antenna using the K40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

**58%
MORE
POWER GAIN
THAN THE
K40**

CALL TODAY

TOLL FREE: 1-800-541-6116
FOR YOUR NEAREST DEALER

Wilson 1000

Available in Black or White

Roof Top Mount	59 ⁹⁵
Trunk Lip Mount	69 ⁹⁵
Magnetic Mount	79 ⁹⁵
Wilson 1000 Trucker	59 ⁹⁵

DEALERS Exclusive dealer areas still open

Wilson

ANTENNA INC.

1181 GRIER DR., STE. A
LAS VEGAS, NV 89119

*Reading Monitoring Times teaches me
more about monitoring each month. I
find it very helpful and look forward to
each issue!*

1991 Survey Comment

Q. Why is there such a wide array of sensitivity requirements for consumer radio and TV sets? Scanners will work on typically 0.5 microvolts, while FM radios require several microvolts and TV sets up to several hundred microvolts. (Huson Wilken, Owego, NY)

A. The narrower the bandwidth, the more sensitive the receiver. Narrowband FM has only 15 kHz deviation; FM broadcasting has 180 kHz, while a TV channel is 6 MHz wide, requiring correspondingly wide filters for its FM sound and AM picture.

Additionally, broadcasters put out power in the tens or even hundreds of thousands of watts, while communications signals are generally in the 100 watt range.

Q. Is there any device that can be added to a speaker or antenna to reduce the electrical noise interference in a radio without clipping (distorting) the audio? (Charlie Diamond, Toronto, Ont.)

A. In a word, no. While theoretically a noise blanker could be devised which could be placed between the antenna and receiver, none exists on the market. Anything which is added between the radio and the speaker must remove noise pulses from the audio and this will distort the sound.

It is possible to minimize electrical noise pickup by grounding the radio, adding ferrite RFI (radio frequency interference) chokes to the external wires and cables and reducing the interfering radiation from household appliances by similar grounding, shielding and adding bypass capacitors to the power cord connections inside the device.

Q. Why does unscrewing the shield of my coax from the chassis of my receiver (but leaving the center pin connected) increase signal strengths at very low frequencies? (David Gasque, Orangeburg, SC)

A. Most random-wire, or even measured-length, antennas for shortwave reception are about 50-75 feet in length. Fed with coaxial cable, this represents a reasonable impedance match (efficiency of signal transfer) through most of the high frequency spectrum.

The lower you tune in frequency, the longer an antenna needs to be for natural impedance matching without an external tuning device. An electrically-short antenna connected to coax cable represents a terrible impedance mismatch--very little of the intercepted signal voltage makes it to the radio.

Some of the signal voltage simply heats up the cable's dielectric (insulation); the remaining signal may be so weak that the receiver's own thermally-generated noise obscures it.

When you disconnect the coax shield at the receiver, the entire length of coax adds to the total antenna length and begins to approach natural resonance (matched impedance), providing higher signal strengths to the receiver.

Virtually all transmatches (incorrectly called "antenna tuners" tune no lower than about 1.8 MHz, so "lowers"--low frequency experimenters--usually have to customize their own equipment.

Q. Why do civilian and military aircraft continue to use AM when all other two-way VHF and UHF services use FM? (Huson Wilken, Owego, NY)

A. Because of safety. With FM, the strongest signal "captures" the receiver, preventing a weaker signal from being heard. On AM, both signals will be heard.

Q. Is it possible to receive a free sample of Monitoring Times? (Fyodor Brazhnikov, Irkutsk, Siberia)

A. Unfortunately, the cost to air mail a single sample issue of MT to Siberia would take several of our staff out to lunch. While I wish we could accommodate the enormous numbers of requests for free samples, we must abide by our break-even offer to send a sample for \$3 anywhere in the U.S., or 7 International Reply Coupons (IRCs) worldwide.

Q. MT has previously published two modifications which enable cellular reception in the BC200XLT scanner, one by adding a resistor, the other by removing one. Which is correct? (KG)

A. The early BC200s had a small chip resistor which disabled cellular frequencies; its removal restored cellular reception. All current models, however, require the addition of a small resistor to enable the cellular band.

Cellular restoration procedures for any scanner capable of the restoration are available for \$2 plus a self-addressed stamped envelope sent to MT.

Q. Why doesn't someone come out with a low-cost tabletop shortwave receiver with notch filter, 24 hour clock, IF shift, headphone FM stereo, dial light and other good specifications at a low cost? (Charlie Diamond, Toronto, Ont)

A. Someone is working on it; the prototype is scheduled to be shown at the MT convention in Knoxville this October.

Q. What is the frequency range for cordless telephones and are they protected by the Electronic Communications Privacy Act? (Gerald Brookman, Kenai, AK)

A. The handset transmits only the voice of its

Bob's Tip of the Month

Improve the Audio on your Scanner or Receiver

An anonymous tip this month comes from a reader in Laredo, Texas, who has found out that adding a filter to an external speaker can improve the audio on just about any radio.

In the past he used such commercially-available filters as the Super-SCAF and Datong Auto-Notch along with a Radio Shack Minimus 3.5 Speaker.

The big surprise came when he added a Realistic electronic reverb unit. The experimenter discovered that the unit reinforces the voice while phase-cancelling impulse noise! Interesting.

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a prompt, personal reply, mail your question along with a self-addressed stamped envelope (no telephone calls, please) in care of MT.

holder on one of ten frequencies between 49.67 and 49.97 MHz; the mating base unit transmits both sides of the conversation on corresponding frequencies between 46.61 and 46.97 MHz.

Cordless telephones are specifically excluded from privacy protection under the ECPA.

Q. I would like to mount an FM antenna on my roof. How can I be sure that a nearby attic fan, neighboring three-story metal-reinforced building, a power distribution yard 1/2 mile away and a manufacturing plant 1/4 mile away won't cause interference? (Huson Wilken, Owego, NY)

A. As long as your antenna is a few feet above the attic fan, no problem. The nearby building will cause severe reflections, but a rotatable scanner antenna can be adjusted to minimize reflected signal cancellations. I wouldn't worry about the power yard, assuming it meets required standards for incidental interference.

There is nothing you can do about the factory except establish dialogue with them to install noise suppressors on offending equipment. If you feel they are in violation, contact your nearest FCC field office for help.

Q. I recently saw an ad for the Datong FL3 audio filter which claimed to remove whistle and tone interference from SSB, RTTY and CW, but nothing about AM. Why not? (Rolly Jones, Kailua, HI)

A. The ad pointed out what a difference the filter would make in cluttered interference commonly encountered by utility monitors and hams. Once the signal is detected by the receiver, it becomes audio, regardless of the original mode, and the Datong filter processes the audio. It works just fine removing heterodyne tones from adjacent channel AM broadcasters.

Q. Are you contemplating offering a storage case for volumes of *Monitoring Times*? (Marvin Grimshaw, Kenosha, WI)

A. No. Binders are readily available from office supply catalogs. We like Quill Corporation (PO Box 4700, Lincolnshire, IL 60197-4700; phone 708-634-4800). In small quantities, magazine files cost only a dollar or two.


Q. Regardless of the FM stereo station I am hearing, there is always noise in the left channel, but not the right. How come? (Huson Wilken, Owego, NY)

A. Try substituting a borrowed stereo receiver to see if yours is defective; in the "old days," you could realign the discriminator circuitry, but new stereos have the decoder on a chip, a replacement of which may be necessary.

★ ★ ★ ★ ★ GALAXY ELECTRONICS ★ ★ ★ ★ ★


67 EBER AVE. BOX-1202
AKRON, OHIO-44309
216-376-2402

NEW




AR-1000★
AR-1000
1000ch, covers 8-600 & 805-1,300 MHz, 10 Search Banks, LCD Display, Priority, AC/DC, Complete with all Accessories
369

NEW




BC200XLT
200 Channels, 12 band with aircraft & 800 MHz, 10 priority channels, channel lockout, scan delay, automatic search, illuminated LCD display, snap-on battery pack, programmable, track tuning, direct channel access, with AC adapter, leather carry case & earphone
249

AR-2500
2016ch, covers 1-1,500 MHz, LCD Display, Search, Delay, Priority, AC/DC, Complete with all Accessories
469



NEW



BC760XLT 100 channel 12 band base/mobile scanner with 800 MHz band & Service Scan Weather, Priority, Lockout, Scan delay, Search, Programmable, Track tuning Direct ch access
279

SHORTWAVE RADIO

KENWOOD R-5000 100kHz-30mhz Digital 100 Memorys	\$849.00
R-2000 150kHz-30mhz Digital 10 Memorys	\$649.00
SONY-2010 150kHz-30mhz 75-108 118 136mhz	\$359.00
SONY-2003 150kHz-30mhz Scanning Memorys	\$259.00
ICOM R-71A 100kHz-30mhz 32 Memorys	\$849.00
ICOM R-7000 25-2 000mhz 100 Memorys	\$1049.00
ICOM R-9000 100kHz-2 000mhz 1000 Memorys	\$4795.00
NRD-525 0.9-34mhz 200 Memorys Digital	\$1159.00
FRG-9600 60-905mhz Continuous 100 Memorys	\$559.00
FRG-8800 150kHz-30mhz Memorys Scans	\$679.00
GRUNDIG-500 1.6-30mhz Memorys Scans	\$499.00
KENWOOD RZ-1 1mhz-905mhz Continuous 100 Memory	\$499.00
SANGEAN ATS-808 45 Memorys LCD Display More!	\$219.00

POLICE/FIRE SCANNERS

BEARCAT

BC-200XLT 200ch 29-54 118-174 406-512 806-952	
BC-760XLT 100ch 29-54 118-174 406-512 806-952	
BC-600XLT 100ch 29-54 118-174 406-512 Service Search	\$229.00
BC-100XLT 100ch 29-54 118-174 406-512 Handheld	\$209.00
BC-800XLT 400ch 29-54 118-174 406-512 806-912	\$269.00
BC-210XLT 40ch 29-54 118-174 406-512mhz	\$219.00

REGENCY

TS-2 75ch 29-54 118-174 406-512 806-950	\$299.00
TS-1 35ch 29-54 118-174 406-512 Turbo Scan	\$199.00
INF-2 50ch Pre-Programmed for All 50 States	\$189.00
INF-5 Pre-Programmed AC Only Digital	\$99.00
R-2060 60ch 29-54 136-174 406-512mhz	\$129.00

USED GEAR 28 PAGE 1991 PICTURE CATALOG \$1.00 **BUY SELL TRADE**

AIR/POLICE/800 MHz

SAME DAY C.O.D. SHIPPING

FREE SHIPPING & INSURANCE!!!

WE TAKE TRADES!!!

LETTERS

continued from page 3

Since I wrote about RCI's last days in *MT*'s May issue we've had some success in making people more aware of the enormous consequences of cutting one-third of RCI's budget and one half of its staff. Three quarters of RCI's original programming has now been eliminated.

Despite a press conference in Ottawa and a lobbying effort that has touched hundreds of parliamentarians, provincial politicians, interest groups and companies, our impact on the national consciousness has not been as successful as we hoped.

We have had some surprising shows of support. One of the most remarkable came from a government senator, Finlay MacDonald, who criticized his own party for "gutting" RCI in its attempt to control the national deficit. This has shown us that given a chance to explain the extent of the damage done to RCI, most people will eventually realize this "saving" of \$7 million will cost Canada much more in commerce, tourism, politics and our world image.

We've been touched by your reaction to RCI's situation. Thousands of you have written to express your outrage. Canadian Communications Minister Perrin Beatty alone has received 400 pieces of mail, half of it from outside Canada.

As we approached the July 15th deadline when many of us ceased to be RCI employees, more and more people dropped out of the lobbying effort as they tried to get on with their lives.

But a core group remains.

Although, as the main spokesperson for the Coalition I was quoted widely, there were other people who put their lives on hold to continue the fight to restore RCI. Maggy Akerblom and Patricia Maxein of the German service doggedly pounded out faxes and lobbied Canadians and others by phone.

Two shortwave supporters, Sheldon Harvey and Bill Westenhaber of the CIDX, inspired us with their hard work on our behalf. For us they represented the 16 million listeners who listened to RCI.

Can RCI be restored? Yes, but it's a long shot, and it can't happen immediately, since the parliamentarians are on summer vacation. Come this autumn, the RCI question may be raised in a number of parliamentary committees. We of the Coalition will be there to make sure everyone knows just how bad this cut is. What will be restored will depend on how much money the government can be convinced should be given back to RCI. And that will depend on how long we can keep the pressure up, including how long you continue sending your letters and faxes to the following officials:

Prime Minister Brian Mulroney, Fax: [613] 957-5636 or 957-5593; Communications Minister Perrin Beatty, Fax: [613] 952-2429; External Affairs Minister Barbara McDougall, Fax: [613] 992-6474 and Finance Minister Don Mazankowski, Fax: [613] 957-5652. (The mailing address is the same for all of them: House of Commons, Ottawa, Canada K1A 0A6.)

As for our own personal future, it is clouded. Some of the colleagues with little seniority have lost their jobs outright. Others of us have jobs with the domestic service, but almost no one is in an on-air position.

We can be reached at the following address: Coalition to Restore Full RCI Funding, c/o SCFP Local 675, 1250 de la

Visitation, Montreal, Canada H2L 3B4; Fax, [514] 521-3082, Telephone [514] 844-2262.

Once again, thanks for your support. Wojtek Gwiazda, Montreal, Canada."

Occasionally a radio hobbyist is lucky enough to turn his expertise into a business. Linton Robertson, author of this month's article on restoring vintage radios, has restored so many for friends and acquaintances that it has grown into a cottage industry he calls "American Radio Revival: new life for old boxes." He gives free estimates and charges \$25 per hour; the business card implies there's no charge if he can't return a vintage set to factory performance and original appearance! If you want to take him up on it, give Lin a call at 619-488-3226.

Bruce Heald, another *MT* author and advertiser, who runs a scanner frequency search service, assures us he is still in business. In case you planned to order from him, he will advertise again as soon as he knows his new address.

Dr. Bart Bishop, a chiropractor from Whittier, California, says Americans are late-comers when it comes to recognizing the effect of electromagnetic radiation on the human body (see March issue). Dr. Bishop adds, "As a clinical practitioner, I can tell you that numbers of people have been relieved of their morning headaches and joint stiffness by simply turning the electric blanket off before getting into bed.

"Of course, since there is no research to back this up, how can I make a statement like this? Let's look at it another way: what is the difference between illness and disease? Illness is what the patient feels and disease is what the doctor can demonstrate! Now, do you go to the doctor because you want him to prove you are sick or do you want to feel better?"

Bob Grove's reference to AM stereo as an "experiment in bad audio" (June "Ask Bob" column), has stirred up the Society of Broadcast Engineers in Hollywood, California. Reader Steve Blodgett, WA7GFV, writes: "Many of us are puzzled about the comment. We routinely hear from AM stereo listeners who hear us on one of the more than three million AM stereo car receivers on Southern California freeways. Often they ask the question, 'Where can I get an AM stereo radio for home?' They ask because they want it. They like it. It sounds (according to many of them) BETTER than FM."

Blodgett continues with an example: "Last fall, one of the local chief engineers told me that

Monitoring Post Pin-Up



Jeff Seymour "Dragonmaster" of Colonial Heights, VA sent in this photo of his set-up.

his daughter, upon getting into the car one day and hearing his station in stereo, said, 'Hey, Dad, I didn't know you guys got FM!' 'It sounds like FM' is a very commonly heard reaction to AM stereo.

"Eighteen months ago while on vacation I found myself fooled by my own radio. I had left the station on a station on the upper end of the AM dial overnight. When I got in the car the next morning, I noticed the impressive stereo performance of the station which I at first thought was an FM station. Looking at the dial I realized that I had left the radio on AM.

"There is considerable engineering expertise in the Los Angeles broadcast community. Standards are set here by many who are pioneers in broadcasting. There exists a high degree of pride in the technical performance of our radio stations. While we recognize that there are operations around the country which may be technically unsound, our experience in AM stereo has proven to us that it is certainly not an experiment in bad audio."

Steve, your experience seems to be backed up by other listeners who agree that AM stereo has improved greatly and the number of stations experimenting with AM stereo broadcasts is steadily increasing. Even nearby Asheville, North Carolina, has a new stereo broadcast station, according to reader Joe Benson of California.

However, the mode will not present a real alternative to FM, says Bob Grove, until the industry can decide upon a standard technology. There are three mutually exclusive systems currently competing for the market, and until that conflict is resolved, manufacturers are not likely to turn out receivers capable of decoding AM stereo in any great number.

That's the mail for August; we'll see you in September with more good monitoring times.

*- Rachel Baughn,
Editor*

We'd like to hear your comments, opinions, and experiences concerning the world of radio. Please understand that personal replies are not always possible.

Letters should be addressed to Letters to the Editor, Monitoring Times, P.O. Box 98, Brasstown, NC 28902. Please include your name and address (may be withheld at your

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Aug 3-4	Jacksonville, FL	Greater Jacksonville Amateur Radio & Computer Show/Billy Williams, N4UF PO Box 9673, Jacksonville, FL 32208, (904) 766-2410 or (904) 765-3230. Location: Osborn Convention Center, Sat 9am-5pm, Sun 9am-3pm, \$5 admission.
Aug 4	Randolph, OH	Portage Amateur Radio Club/Joanne Solak, KJ30 9971 Diagonal Rd., Mantua, OH 44255
Aug 4	Berryville, VA	Shenandoah Valley ARC/John Kanode, N4MM RFD #1, Box 73A, Boyce, VA 22620
Aug 4	Peotone, IL	Hamfesters Radio Club/Dave Brasel, NF9N 7528 W. 109th Pl., Worth, IL 60482
Aug 10	Huntington, WV	Tri-State Amateur Radio Assoc-Hamfest 91/Georgia, KA8QME (304) 522-1811. Location: Ceredo-Kenova Community Center, 1200 Block of Oak St., just off Route 60, 8am, \$5 admission. Talk in 146.76
Aug 10-11	Huntsville, AL	Huntsville Hamfest, Inc./Don Tunstall, WB4HOK 1215 Dale Dr. SE, Huntsville, AL 35801
Aug 10-11	High Point, NC	High Point ARC/Mark McMahan PO Box 1163, Janestown, NC 27282
Aug 11	Warrington, PA	Mid-Atlantic Amateur Radio Club Hamfest 91/AI Maslin, W3DZI (215) 446-4936 Location: Bucks County Drive-In Theatre, US 611, 5 miles north of PA Tpke Exit 27 (Willow Grove), 8am, \$3 admission. Talk in on 147.66/147.06 and 146.52.
Aug 11	Frankfort, KY	Central Kentucky Hamfest/Bill C. Woodward 451 Anniston Dr., Lexington, KY 40505 (606) 299-4304.
Aug 17	Brewster, NY	PEARL, Putnam Emergency and Amateur Repeater League/ Joel Rappaport, WA2AWG, Box 216, RR2, No White Rock Rd., Holmes, NY 12531, (914) 855-1672
Aug 18	Quincy, IL	Western Illinois ARC/Michael Nowack, NA9Q 2011 N. Sheridan, Quincy, IL 62301
Aug 23-25	Saginaw, MI	ARRL National Convention/Joe Turner, K8CQF 423 N. Granger, Saginaw, MI
Aug 25	Ft. Wayne, IN	Ft. Wayne ARC/Edwin Weinstein, WD9AYR Frank Jaworski, K1FJ 3923 Oakleaf Dr., Ft. Wayne, IN 46815
Sep 8	Joliet, IL	Bolingbrook ARS/Edwin Weinstein, WD9AYR 7511 Walnut Ave., Woodridge, IL 60517
Sep 8	Butler, PA	Butler County ARS/Gerald Wetzel, W3DMB 784 Mercer Rd., Butler, PA 16001
Sep 13-15	Melbourne, FL	PCARS, Platinum Coast ARS/Gerry Wentz, KC4EHT (407) 254-3095 Location: Melbourne Auditorium, Hibiscus Blvd. near US #1, Sat 9-5, Sun 9-4. Talk in 146.25/85
Sep 15	Queens, NY	Hall of Science Hamfest/Steve Greenbam, WB2KDG (718) 898-5599 or Arnie Schiffman, WB2YXB (718) 343-0172. Location: New York Hall of Science parking lot-Flushing Meadow Park, 47-01 111th Street. Doors open at 9 am.
Sep 20-22	Watertown, SD	Dakota Division Convention/Darwin Hegg, KZ0E RR3 Box 96, Watertown, SD 57201
Sep 21-22	York, PA	York ARC/Ray Shaub, W3AXC 2331 Locust Rd., Dover, PA 17315
Sep 21-22	Virginia Bch, VA	Virginia Beach Hamfest/Lewis Steingold (804) 486-3800 Location: Virginia Beach Pavilion Conference Center
Sep 21-22	Peoria, IL	Peoria Superfest 91 and Computer Show/Merv Rennich, N9FXS (309) 243-5298 or (309) 675-7390 Location: Exposition Gardens, Northmoor and University Sts., 8 am, \$5 admission good for both days.
Sep 22	Cleveland, OH	Cleveland Hamfest Assn/Glenn Williams, AF8C 513 Kenilworth Rd., Bay Village, OH 44140
Sep 28-29	Louisville, KY	Kentucky State Convention/Mike Doerhoefer, Wb4AJZ PO Box 34233, Louisville, KY 40233
Sep 29	Yonkers, NY	Metro 70cm Network/Otto Supliski, WB2SLQ 53 Hayward St., Yonkers, NY 10704
Sep 29	Longmont, CO	BARCfest 91/CO Assoc of DXers* Location: Boulder County Fairgrounds, 8am to ??

* Colorado Assoc of DXers, P.O. Box 22202, Denver, CO 80222-0202 for info

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, PO Box 98, Brasstown, NC 28902.

STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date. All ads must be paid in advance to *Monitoring Times*.

Monitoring Times assumes no responsibility for misrepresented merchandise.

NON-COMMERCIAL SUBSCRIBER RATES: \$.25 per word - *Subscribers only*. All merchandise must be personal and radio-related.

COMMERCIAL RATES: \$1.00 per word. Commercial line ads printed in bold type.

1-3/4" SQUARE DISPLAY AD: \$50 per issue. send camera-ready copy or copy to be typeset. Photo-reduction \$5 additional charge. For more information on commercial ads contact Beth Leinbach, 704/389-4007.

INDEX OF ADVERTISERS

ACE Communications	95
Advanced Electronic Applications	73
Advanced Electronic Technologies	93
Antennas West	27, 59, 95
Antique Radio Classified	53
American Radio Relay League	89
Ashton ITC	41
Brendales	23
C. Crane Company	25
Cellular Security Group	45
Communications Electronics	15
CQ Communications	55
Datametrics	91
DX Computing	21
DX Radio Supply	3
Electron Processing	23
Electronic Equipment Bank	19
11-Meter Communications	49
Future Scanning Systems	17
Galaxy Electronics	99
Gilfer Shortwave	43
GRE America	11
Grove Enterprises	41, Cover III
Hunterdon Aero Publishers	47
ICOM America	Cover IV
Industrial Comm Engineers	91
Intercept, Inc.	5
J & J Enterprises	17
Japan Radio Co.	57
Klingenfuss Publications	39
Lakeview	5
MilSpec Communications	35
Monitoring Times	7, 103
Moonbeam Press	23
OptoElectronics	Cover II
Palomar engineering	45
Popular Electronics	85
Scanner World	37
Skyvision	13
Software Systems Consulting	21, 53
Somerset Electronics	51
Spec-Com	43
Tiare Publications	25
TRS Consultants	17
Turbo Electronics	53
Universal Shortwave Radio	91
Wilson Antenna	97

CLASSIFIED RADIO

BUY/SELL/TRADE. Advertise **FREE**, pay only if equipment sells, \$15 max! Twice monthly. Easy to read! Subscriptions only \$12/year. Free samples, ad line 1-800-553-9175. P.O. Box 245, Jonesboro, GA 30237.

MAKE \$\$\$ become an American Electronics Dealer! Profit Opportunities since 1965. Call Dave Wainscott, 1-800-872-1373.

SCANNER FREQUENCY SEARCH SERVICE. Hear all there is to hear! SASE to: HEALD, 6886M Jefferson, North Branch, MI 48461.

SURVEILLANCE, COUNTER SURVEILLANCE EQUIPMENT FOR SALE. WRITE SHERWOOD COMMUNICATIONS, BOX 535-G, SOUTHAMPTON, PA 18966 (215) 357-9065]

LEARN VCR REPAIR. Earn up to \$60/hour! 4-hour video tape teaches you! \$41.95. INFO SASE: Atlantic (MT), Box 12627, Charleston, SC 29422.

PRO-2004 excellent condition, 400 memories & 30-channel/sec scan, detachable AC cord. \$275. Evan (708) 866-9792.

WANTED: AMATEUR RADIO VIDEO CASSETTE THEORY CLASS. All information to: Boxholder, P.O. Box 726, East Berlin, PA 17316-0726.

A.E.A. ISOLOOP HF ANTENNA 14 to 30 MHz BN, \$175; **JO-GUNN SKIPJACK BEAM ANTENNA**, \$80. John (716) 693-5290 6-10 PM EST.

GRUNDIG 650, mint, original box, manual, \$500. Robert Gibson, (614) 246-5911.

KENWOOD R5000, VC20 UHF Converter, EEB AM Filter, manual, Cost \$1158.85. Ship UPS for \$750. (802) 878-2206.

WANTED: The book *Shortwave Radio Listening with the Experts* by Gerry Dexter.

Will pay \$20 plus shipping. Dann McKee, Box 2316, Winter Park, FL 32790, (407) 898-4152.

BRAND NEW AR2500 wide range monitor. All options with auto mounting bracket. Purchased Jan 1991, will sacrifice for \$465 or will trade for AR1000 and cash. Rich Snider, (419) 241-3614.

NRD 525, 2 extra filters, ESKAB mods, speaker, service manual. \$1000. Alan (301) 229-7069 before 0200 UTC.

CLASSIC SHORTWAVE RECEIVERS - DRAKE SW-4 \$150, **HALLICRAFTERS SX-62A** \$120, **NATIONAL NC-88** \$60. Fred, (213) 534-2979 eves/wknds.

BECKER AUTO SHORTWAVE CONVERTER (proper for Mercedes) \$30, (318) 984-2561.

MFJ SHORTWAVE CONVERTER WANTED (318) 984-2561.

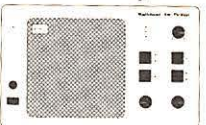
MOTOROLA repeaters (solid state) \$200, **MOTOROLA** signal generators (T1034B) 25-960 MHz \$250, **VHF Mobiles** \$90, Antennas, test equipment etc, ask for list. Have several of each. Rene VE6WCA PH/FAX (403) 436-3427.

\$500 CASH PAID FOR EICO MODEL 711 SPACE RANGER SHORTWAVE RADIO. Was a kit in late 1960s. Wanted for nostalgic reasons please call me collect at (305) 476-1451 or mail David Frantz, 13324 SW 28st., Davie, FL 33330.

JAPAN RADIO NRD-525 New in box with 232 interface card and cable. \$890. (415) 332-3742.

INFO-TECH M-800 FAX DECODER/RECEIVER \$225, **AMBER MONITOR** \$30, **AEA CP-100** Computer interface (DX special), new, in box \$100. **COMMODORE 64C** and **1541II DISK DRIVE**, lots of Geos software \$130 for all. (415) 332-3742.

THE MAP *DX 'ability'!*



The MAP improves your receiver's SELECTIVITY and AUDIO QUALITY without modifications

- Easy To Install
- Wide and Narrow Bandwidths
- Synchronous Detection
- Works with 455 kHz IF receivers

KIWA 612 South 14th. Av. Write or call
Yakima, WA 98902 509-453-KIWA for information

Radio Frequency Guides on Microfiche

City - State - Federal

Some unavailable elsewhere
Call or write for
FREE SAMPLES
and prices.

North Florida Radio
PO Box 12601
Tallahassee, FL 32317
(904) 878-7937

PRO-2004/5/6
Search and Store Modules

- Automatically find unknown frequencies. Internal no-holes installation, keyboard control, retain all present functions.
- Dual-mode Power Model PS-90 stores in the main memory channels with a DIP switch adjustable limit to 255 channels or only in the ten monitor ch. - \$44.95
- Model SS-45, Ten monitor ch. - \$24.95

Wired/Tested/Postpaid (US & Canada)
US checks or MO in US, NC add tax
For full info/specs send SASE

KEY RESEARCH
POB 846M, CARY, NC 27512-0846

Your Longwave Source... LF Engineering Co.

L-101B VLF Converter.....\$49.00
L-201 VLF Preamp.....\$49.00
L-400B LF Active Antenna.....\$98.00
L-101S LF Rec. System.....\$119.00
TM-1 LF Xmitr, 1 Watt.....\$119.00
(products are postage paid in N. America)

Send for our free catalog

LF Engineering Co. Inc. VISA and MasterCard accepted
17 Jeffry Road
East Haven, CT 06513
(203) 248-6816

BUGGED? WIRETAPPED?

Find out fast! Factory direct countermeasures equipment catalog \$1.

CAPRI ELECTRONICS
P.O. Box 589A
Bayfield, CO 81122
(303) 884-9084

RADIO NEW YORK INTERNATIONAL

Dedicated to global awareness of our environment and the promotion of world peace and understanding

Broadcasting Sundays
9:00 pm to 1:00 am EST
on 7520 kHz

Radio New York International
Box 270, Flushing, NY 11352
718-961-6463

YOU AIN'T HEARD NOTHIN'...YET!

Largest selection of scanner frequency guides (federal, military, police, aero, etc.); AM/FM/TV broadcast directories; HiFi "ute" directories; Books on espionage, covert ops., bugging, wiretapping, surveillance, clandestine radio, & more!
BIG FREE CATALOG!

CRB RESEARCH
P.O. Box 56-MT
Commack NY 11725

HUGE 88 PAGE CATALOG

- Shortwave Receivers
- Amateur Radio Gear
- Scanners
- RTTY & FAX Equipment
- Books & Accessories

Send \$1 to **Universal Radio**
1280 Alda Drive
Reynoldsburg, OH 43068

MONITORING TIMES

America's fastest growing monitoring hobby magazine! To subscribe just send the information below with your payment to *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902.

U.S. (mailed second class*):

☐ 1 Year \$19.50 ☐ 2 Years \$37.00 ☐ 3 Years \$54.00
(12 issues) (24 issues) (36 issues)

* If you prefer first class mail in an envelope, add \$25.00 per year (i.e., one year = \$44.50)

Payment received by the 10th of the month will receive next month's issue. Current or back issues, when available, can be purchased for \$4.50 each (includes 1st class mailing in U.S.)

Canada, Mexico and Overseas:
(mailed in an envelope second class*)

☐ 1 Year \$28.00 ☐ 2 Years \$54.00 ☐ 3 Years \$78.00
* If you prefer air mail, please write for rates.

All foreign subscriptions must be paid by Visa, Mastercard, International Bank or Postal Money Order in U.S. funds.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

☐ Mastercard ☐ Visa

Month _____ Year _____

INDOOR ANTENNAS

HF BROADBAND ANTENNAS
CPL-102A \$29.95 + 4.00 S/H
CPL-102B \$39.95 + 5.00 S/H
AUDIO LOW-PASS FILTER
CPL-103 \$29.95 + 3.50 S/H
HOUSE WIRING ANTENNA
CPL-104 \$24.95 + 3.50 S/H
UNIVERSAL WIRE ANTENNA
CPL-105 \$11.95 + 2.50 S/H

SEND FOR CATALOG TODAY

CHILTON PACIFIC LTD.
5832 VAN NUYS BLVD #222
VAN NUYS, CA 91401

CONDENSE THE ACTION!

The new ACTION TAPE CONTROLLER connects your scanner to your tape recorder, activating your recorder when your scanner picks up some "action", stopping it while your scanner is silently scanning. Great for catching rare action on FBI, DEA, SWAT, Customs, etc. frequencies, or nighttime monitoring. Needs no batteries or AC power. Assembled warranty: \$29.95.

Also available: FM Wireless Speaker Relay. Listen to your scanner or SW receiver on any FM radio up to 1/10 mile away. 75% assembled kit: \$37.95. Full kit: \$28.95

Shipping: Add \$3.00 (ground) or \$4.50 (air) per order. Send 29c stamp for catalog of all our products. Watch for our new ad elsewhere in the next issue.

Worldcom Technology
P.O. Box 3364
Fl. Pierre, FL 34948 (407) 466-4640

ICOM IC-R1
Communications Receiver

Handheld portable scanner. Wideband frequency coverage: 100 kHz to 1300 MHz continuous coverage. Signal strength indicator, 100 memories, 10 banks of search frequencies. FM, wideband FM and AM modes. Selectable channel separation: 0.5, 5, 8, 9, 10, 12.5, 15, 20, 25, 30, 50 kHz. Clock and power on/off timers. Built-in NiCd battery. Many other features. Uses same accessories as other ICOM handhelds. Includes AC adapter/charger, antenna, carrying strap, and belt clip. Dimensions 1.9"Wx4"Hx1.4"D, weight 9.9 oz.

New with warranty - \$495
703-222-7554

CANADIANS

Discounted Prices on Uniden Scanners, CB's, Cordless and Cellular Phones and Accessories

Send for FREE listing or request quotation.

Cellular Communications
83 Galaxy Blvd. #39
Rexdale, Ont. M9W-5X6

SUPER SOUND DETECTOR
HEAR THROUGH WALLS!

ELECTRONIC STETHOSCOPE
Ultra-sensitive device picks up & amplifies sound through solid objects. Hear through glass, wood, plaster, brick or even 12" concrete. Use wherever audible sound is too faint for the unaided human ear. Picks up voices, machinery, running water, even mice or insects. Can be attached directly to a tape recorder. Includes headphones, sensor and battery. \$69.95 check/MO to:

CLE, Box 1913
Sarasota, FL 34230-1913
(813) 922-2633.
Visa/MC accepted.

Radio for Peace International T-Shirts!

Blue, Green, Yellow design on White T-Shirt
\$15.00 each ppd, specify size(s):
M, L, XL

RADIO FOR PEACE INTERNATIONAL
P.O. BOX 10869-C
EUGENE, OREGON 97440

Another Look at Cellular

The personal communications industry is a giant, growing with no end in sight. Cellular telephones of the future will be much smaller, much more "personal." Roving about the country while remaining within contact range will become a reality. Other forms of personal communications devices will evolve as well.

Back in 1987—it seems so long ago in the blur of advancing technology—the Cellular Telecommunications Industry Association (CTIA) stunned the recreational monitoring hobby with its successful lobbying for a lopsided law that pretended no one would listen to their mobile telephones if it were made illegal.

As we see on TV, hear on the radio and read in the press, the ploy backfired; more people listen to "private" radio telephones than ever before. So what effect has this had on the cellular industry and what is likely to happen in the future?

Cellular continues to grow, as does the hobby monitoring hobby—a reasonable guesstimate would be 10 to 20 million listeners out there—so many that Congress is now considering decriminalizing recreational monitoring, directing the regulation and penalties toward targeted surveillance.

This makes good sense. Grove Enterprises and many other communications companies

have filed formally their support of this proposed legislation.

It would probably be in the best interest of the CTIA to allow this natural swing of the pendulum. Cellular manufacturers are already under fire and suspicion for misrepresenting the fictional "privacy" of cellular telephones to the American public. Aware that it is incumbent upon the sender to protect his message if he doesn't want it overheard, attorneys across the country are eager to expose the fallacies of the CTIA-fabricated Electronic Communications Privacy Act (ECPA) in court.

But it's just possible such a test case may not come soon. Radio telephones of the future will be digitally scrambled, making them immune to casual interception. The public, aware of conventional cellular's vulnerability to uninvited eavesdropping, should flock to the newer, more secure technology—an enormous profit incentive for CTIA to lay low on the listening hobbyists!

For the moment, then, let's hope that the news from Washington will be favorable to the radio monitoring hobby. Congress has an excellent opportunity to right a wrong by exonerating the radio listener who merely tunes in on signals which pervade his home uninvited. We'll keep you posted!

*Bob Grove, WA4PYQ
Publisher*



Special Pre-Publication Offer

only \$15.95 SAVE \$4.50
(Includes shipping in U.S.)

Passport is the ultimate radio roadmap to exotic lands -- who's on what frequencies at what times, while computer-generated graphics make it easy to use. And Larry Magne's highly acclaimed, no-holds-barred, 1992 "Buyers Guide to World Band Radio" is included.

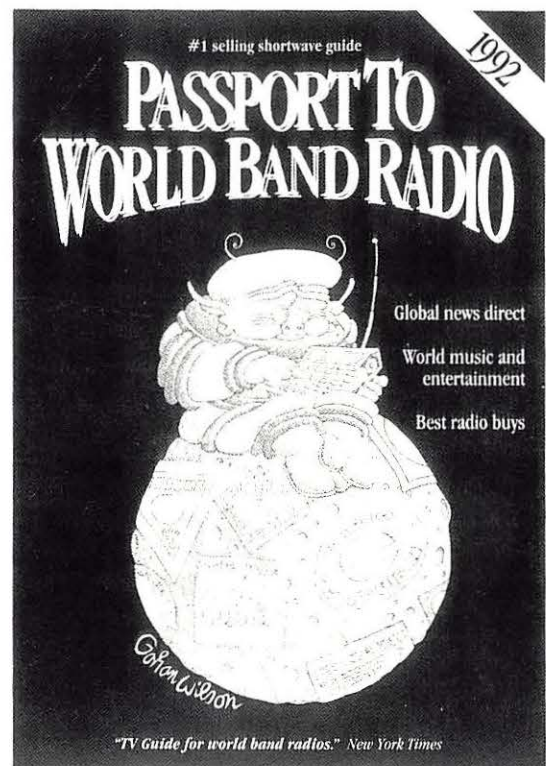
Get the most from your shortwave receiver by using the foremost guide to world band listening. Reserve your copy at a special pre-publication discount -- only \$15.95 (regular price \$16.95 plus \$3.50 shipping) and we will prepay shipping in the U.S.! But **you must order now -- before Sept. 15, 1991.**

Call 1-800-438-8155 for *VISA, MasterCard or send a check or money order to Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

The 1992 Passport to World Band Radio

If you order **now**, you will receive in mid-September the 1992 edition of *Passport to World Band Radio*, recognized as the leading guide to shortwave listening -- the "bible" of SWLs worldwide -- at a discount.

Why is *Passport* the leader? Approximately 400 easy-to-read pages provide up-to-date frequencies, schedules and languages of worldwide broadcasters; interviews with and articles by the best known names in shortwave listening; in-depth, authoritative reviews of receiving equipment and accessories.



* Payment will be processed at time of order. For foreign surface mail add \$5.00 (Canada) or \$10.00 (Europe); foreign air mail add \$5.50 (Canada) or \$20.00 (Europe).



THE BEST OF BOTH WORLDS.

The pacesetter IC-R9000 truly reflects ICOM's long-term commitment to excellence. This single-cabinet receiver covers both local area VHF/UHF and worldwide MF/HF bands. It's a natural first choice for elaborate communications centers, professional service facilities and serious home setups alike. Test-tune ICOM's IC-R9000 and experience a totally new dimension in top-of-the-line receiver performance!

Complete Communications Receiver. Covers 100KHz to 1999.8MHz, all modes, all frequencies! The general coverage IC-R9000 receiver uses 11 separate bandpass filters in the 100KHz to 30MHz range and precise-tuned bandpass filters with low noise GaAsFETs in VHF and upper frequency bands. Exceptionally high sensitivity, intermod immunity and frequency stability in all ranges.

Multi-Function Five Inch CRT. Displays frequencies, modes, memory contents,

operator-entered notes and function menus. Features a subdisplay area for printed modes such as RTTY, SITOR and PACKET (external T.U. required).

Spectrum Scope. Indicates all signal activities within a +/-25, 50 or 100KHz range of your tuned frequency. It's ideal for spotting random signals that pass unnoticed with ordinary monitoring receivers.

1000 Multi-Function Memories. Store frequencies, modes, and tuning steps. Includes an editor for moving contents between memories, plus an on-screen notepad for all memory locations.

Eight Scanning Modes. Includes programmable limits, automatic frequency and time-mark storage of scanned signals, full, restricted or mode-selected memory scanning, priority channel watch, voice-sense scanning and scanning a selectable width around your tuned frequency. Absolutely the last word in full spectrum monitoring.

Professional Quality Throughout. The revolutionary IC-R9000 features IF Shift, IF Notch, a fully adjustable noise blanker, and more. The Direct Digital Synthesizer assures the widest dynamic range, lowest noise and rapid scanning. Designed for dependable long-term performance. Backed by a full one-year warranty at any one of ICOM's four North American Service Centers!


ICOM
First in Communications

ICOM America, Inc., 2380-116th Ave. N.E., Bellevue, WA 98004
Customer Service Hotline (206) 454-7619
18102 Sky Park South, Ste 52-B, Irvine, CA 92714
1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349
ICOM CANADA, A Division of ICOM America, Inc.,
3071 - #5 Road, Unit 9, Richmond, B.C. V6X 2T4 Canada
All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 9000489